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REXTON VIRGINIA 20181

TEL (703) 441-1111

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October 1, 1987

PRC ENVIRONMENTAL
MANAGEMENT, INC.

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FEDERAL EXPRESS

Mr Gene Gunn
U S Environmental Protection Agency
Region VII
726 Minnesota Avenue
Kansas City, KS 66101

Re EPA Contract No 68-01-7037
PRC Work Assignment No 669

Dear Gene

Enclosed please find the Final Report for the Jasper Site

If you have any questions regarding the enclosed materials,
please call Brian Eaton at 202/476-1100

Sincerely,


Benjamin R. Jackson

BRJ mas
Enclosures

cc Ed DiDomenico - PRC Engineering

40121629



SUPERFUND RECORDS

JASPER SITE
FINAL REPORT

Prepared for

U S ENVIRONMENTAL PROTECTION AGENCY
Office of Waste Programs Enforcement
Washington, D C 20460

Work Assignment No	669
EPA Region	VII
Date Prepared	September 30, 1987
Contract Number	68-01-7037
Prepared By	TechLaw, Inc
WA Project Manager	Brian W Eaton
Telephone Number	(703) 476-1100
EPA Primary Contact	Gene Gunn
EPA Telephone Number	(913) 236-2856

JASPER SITE
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JASPER SITE
FINAL REPORT

I INTRODUCTION

A Project Background

In January 1986, the TES II Team received Work Assignment No 479 to provide enforcement support in searching for parties responsible for contamination at the Jasper site in Jasper County Missouri. This site is part of the Tri-State Mining Area, consisting of southwestern Missouri, southeastern Kansas, and northeastern Oklahoma. From 1848 to 1970, the Tri-State Mining Area produced zinc and lead concentrates, resulting in abandoned waste piles of mill tailings, mine shafts, and collapsed mines which create hazards in these areas.

Under Work Assignment No 479, TechLaw conducted research into lead and zinc mining activity in Jasper County, which resulted in the creation of a computerized database of over 1,000 mining and milling companies which were active in the county, with information on the time period and general areas of operation for each company.

In May 1986, TechLaw was directed to place work on this project on hold, pending a decision by EPA regarding the scope and direction of additional research to be conducted on this project. As directed by EPA, Work Assignment No 479 was closed in July 1987.

In July 1987, the TES II Team received Work Assignment No 669. The EPA Regional Contact was designated as Mr. Gene Gunn (913/236-2856). Under this assignment, TechLaw was requested to prepare a report summarizing the research conducted under Work Assignment No 479, produce computer printouts from the Jasper County Mining database, and provide EPA with copies of all source materials used by TechLaw during the course of this research.

B Project Approach

Under Work Assignment No 479, TechLaw conducted research into lead and zinc mining activities in Jasper County, Missouri, in order to identify companies engaged in such mining activity as potentially responsible parties for the contamination of the Jasper Site.

In order to develop this information, TechLaw relied upon the following reference materials

- 1 Missouri Geological Survey, Volume VII, Lead & Zinc Deposits, Section 2, by Arthur Winslow, 1894
pp 544-595

This work contains a section on the Jasper County portion of the Tri-State Mining Area. The geology of ore formations by mining districts within Jasper County are discussed, as well as the location and productivity of specific mines and mining companies. Maps are also included which identify mine and mining tract locations.

- 2 Mineral Resources of the United States, Part I, Metal Series, U S Geological Survey, 1883 to 1887 1893, 1907 1908 1910 to 1931

Mineral Yearbook, U S Bureau of Mines, 1932 to 1957
1960, 1965

The series of yearbooks referenced above, contain narratives with general to extremely specific information on the mining activities occurring in southwestern Missouri for each year of publication. Most editions identify specific companies with interests in the mining operations in Jasper County, along with information regarding the relative productivity and extent of operations of these companies. Editions from 1907 to 1916 describe mining operations by specific mining districts.

- 3 Study of Stability Problems and Hazard Evaluation in the Missouri Portion of the Tri-State Mining Area, by Michael C McFarland and James C Brown, Jr, Missouri Department of Natural Resources, Division of Geology & Land Survey, April 1983

This study contains a discussion of mining activities in Jasper County, and provides a series of maps which show locations of all known mining areas in a four-quadrangle region near Joplin, Missouri. For areas in the study characterized as hazardous, the maps also identify specific mine names and/or the names of mining companies which operated the mines.

4 Geological Maps Showing Mining and Mineralized Areas,
prepared by the State of Missouri Geological Survey and
Water Resources, 1916 to 1922

These maps were obtained through the Silva Library,
Missouri Southern College, Joplin, Missouri. Each map
displays the location of registered mines near Joplin,
Missouri, and the extent of mine workings at that time

5 U S Geological Survey Maps

These maps cover all of Jasper County, Missouri.
Although specific mine names are not provided, these maps were
used to locate mining areas referenced in the other sources
listed above

Information on the history of mining activities conducted in
Jasper County was obtained from the Mineral Resources and Mineral
Yearbooks (hereinafter "yearbooks"), and the Missouri Geological
Survey, Volume VII, Lead & Zinc Deposits, Section 2, dated 1894, by
Arthur Winslow, (hereinafter the "1894 Report"). The majority of
information concerning the identity of specific mining companies,
mining areas, time periods, and extent of mining activities, was
also obtained from these sources

To organize the specific mining company information contained
in the yearbooks, TechLaw created a computerized database. Each
record of this database contains the name of a mining company, the
date of the yearbook reference, the district in which the mining
activity occurred, and the general nature of this activity (e g ,
mining, milling, etc). When available, information such as the
name of the mine, the number of shafts operated, and other
miscellaneous information, was included in comments fields
associated with each record

From information contained in the Study of Stability Problems
and Hazard Evaluation in the Missouri Portion of the Tri-State
Mining Area, dated April 1983, (hereinafter the "MDNR Study"), the
1894 Report, and the mining maps dated 1916 to 1921, obtained from
the Silva Library, TechLaw compiled a list of mine and mining
company names with specific location information in the form of
Township, Range, Section, and Quarter Section references. Work on
this project was placed on hold by EPA prior to conducting the task
of cross-referencing this list of mines and mining companies with
the mining company references in the database. The specific
location information contained in this list was used, however, to
help define the boundaries of the mining districts referenced in
the database

As indicated in the Project Background section, this report

has been prepared as a summary of the research conducted by TechLaw under Work Assignment No 479 Due to the fact that this research was suspended by EPA prior to its completion, this report should be considered preliminary, and by necessity, non-specific in its identification of parties potentially responsible for the contamination of the Jasper Site As such, there is no section in this report entitled "Potentially Responsible Parties"

The remainder of this report has been organized as follows

Section II - Site Information This section includes a discussion of the history of mining in Jasper County, and a description of the mining districts referenced in this report
Section II A - Site History, contains a description of the mining history of the Jasper County portion of the Tri-State Mining Area
Section II B - Description of Mining Districts, describes the location and extent of the mining districts within Jasper County, as defined by the yearbooks and the 1894 Report, and the steps taken by TechLaw to define these districts by specific Township, Range and Section

Section III - Database Development This section describes the database compiled by TechLaw from the information contained in the mining yearbooks, and the assumptions and procedures used by TechLaw during the development of the database

Section IV - Conclusions and Recommendations This section presents conclusions on the research conducted by TechLaw into mining activity in Jasper County, and recommendations for developing more specific responsible party information for the Jasper Site

Appendix A - Document References This appendix contains a list of each document used as reference in the body of this report Each document has been assigned an identification number which is used to reference the document in the report Copies of these documents are included as Attachment I

Appendix B - Mine Location Index This appendix contains the mine and mining company list compiled from the MDNR Study, the 1894 Report, and the mining maps dated 1916 to 1921 Each mine location is referenced by Township, Range, Section, and Quarter Section

Appendix C - Figures Figures prepared by TechLaw which are referenced in this report are contained in this appendix

Appendix D - Jasper County Mining Database Programs This appendix contains an explanation of the computer programs developed by TechLaw for manipulating the database and producing printouts from the database. The programs and database files are being transmitted to EPA with this report.

Printouts from the Jasper County Mining Database are included as attachments to this report. Attachment II consists of an alphabetic list of each mining company referenced in the database. Attachment III consists of a printout of each record in the database, organized alphabetically by mining company name, and chronologically within company listings. Attachment IV consists of a printout of each record in the database, organized alphabetically by mining district, and chronologically within district.

II SITE INFORMATION

A Site History

According to the MDNR Study, mining activity began in Jasper County in 1848 and peaked in a mining boom during World War I (1914 to 1918) (58). The MDNR Study indicates that the collapse of metal prices following World War I caused a rapid decline in mining from which the Missouri portion of the Tri-State Mining Area never recovered. Although some production continued in southwestern Missouri through the late 1960's, following World War I, major mining activities in the Tri-State Mining Area were shifted to Kansas and Oklahoma (58).

Figure 1 shows the quantity of crude ore milled yearly in southwestern Missouri from 1907 to 1955, superimposed over a chart from the 1947 yearbook showing the quantity of crude ore milled in the entire Tri-State Mining Area from 1907 to 1947 (Appendix C). The decline of the lead and zinc mining industry in southwestern Missouri is illustrated, along with the shift of mining activities to Oklahoma and Kansas. The information on productivity for the Missouri portion of the Tri-State Mining Area was plotted onto the graph by TechLaw from production figures provided in the 1912 to 1955 yearbooks (11 - 53). It should be noted that most of the lead and zinc production in the Missouri portion of the Tri-State Mining Area can be attributed to Jasper County, however, lead and zinc ores were mined in several other counties in southwest Missouri (2 - 57).

According to the MDNR Study, early mining in Jasper County was confined to the upper-ground ore zone, above 100 feet. Early mining tracts were small, with some leases measuring as little as 4,000 square feet (58). Many mining shafts were sunk at close intervals, resulting in thousands of production and prospect shafts. The MDNR study indicates that as easily accessible ores

were exhausted, shafts were sunk deeper, eventually encountering the more extensive lower-ground ore zone or sheet-ground ore bodies, which were mined by a room-and-pillar method (i e , underground mining in which some ore is left in place to support the roof) (58) According to the yearbooks, sheet-ground ore was the principal type mined from 1907 to 1918, although some mining of the upper-ground continued (7 - 17) The 1924 yearbook indicates that in 1921, almost all production was from the upper-ground, and in 1922, no sheet-ground was produced (23) Later volumes of the yearbooks do not indicate whether upper-ground or sheet-ground was predominantly mined (24 - 57)

Some information was provided in the yearbooks and the MDNR Study regarding the milling practices of mining companies According to the yearbooks, mills were placed at each mine or group of mines to concentrate the ore (2 - 57) The yearbooks indicate that over a period of time, these mills developed in capacity, and in ability to concentrate the ore (2 - 57) The 1937 yearbook indicated that some companies began shipping crude ore from Missouri to Oklahoma for milling at that time (35) According to the MDNR Study, the mills generated a variety of waste products, referred to as tailings, consisting of various sizes of waste rock (58) The yearbooks indicate that old tailings were frequently milled to recover lead and zinc ores (2 - 57)

According to the 1914 yearbook, mining of lead ores began in Jasper County, two miles east of Joplin, in 1848 (13) This yearbook also indicated that in 1849, lead was discovered within the limits of Joplin Around 1851, mining was begun on Center Creek in the camp known as Oronogo (13) In 1854, mining began at the Turkey Creek mines, located northeast of Joplin, near Belleville (13) The 1894 Report indicates that lead ore was first dug at Carthage in 1854 (1) The 1914 yearbook states that zinc ore had no value at this time and was thrown aside (13)

According to the 1914 yearbook, the Civil War checked development of lead mining in the Tri-State Mining Area, but work was resumed in 1865 (13) The extension of the St Louis & San Francisco Railroad, which was finished as far as Springfield, Missouri, had the effect of stimulating the mining and smelting industry (13) According to the MDNR Study, the development of new milling and smelting techniques led to the first production of zinc ore in the Tri-State Mining Area, and the 1914 yearbook reported that the first zinc ore was shipped from Joplin in 1872 (58, 13) According to the 1894 Report, in 1873, ore was discovered in the Webb City-Cartersville camp (1) The 1914 yearbook indicates that from 1870 to 1874, the mining population increased rapidly (13) The MDNR Study indicates that by 1875, Missouri had become the leading zinc producer in the United States (58)

According to the 1914 yearbook, from 1880 to 1900, there was a

nearly constant expansion of ore-producing territory, cheaper operating methods were developed, and ore was mined at increasing depths (13) The 1894 Report describes mining camps at that time near Joplin, Scotland, Webb City-Carterville, Lehigh, Sherwood, Oronogo, Carthage, Alba, and Belleville (1) Figure 2 shows the locations of these mining districts as defined in the 1894 report (Appendix C)

Production figures provided in the 1894 Report indicate that the Joplin and Webb City-Carterville districts were the leading ore producers in 1894 (1) The report references a 1893 property map of Webb City-Carterville which reportedly shows over 700 mines within the limits of these towns (1) An 1892 property map reportedly revealed 115 different mines within the town limits of Joplin, and several dozen mines located just outside of Joplin (1) The Tuckahoe mines were referenced as the scene of large operations where great quantities of ore had been mined (1) At the Scotland camp, and an adjoining settlement, Burch Center, mining had more or less been conducted for 25 years, although little work had been conducted recently (1)

The 1894 Report indicates that mining had been more or less continuous in Oronogo since its beginning, and that during the first years of mining, the camp was a principal producer (1) The 1894 Report indicated that the Belleville mines had been very productive and contained extensive excavations (1) According to the report, the Alba mines were new mines in 1886, and had only been operated at intervals, and the Sherwood mines had never been important producers (1) The mines at Lehigh had produced large quantities of ore in the past, but production had been impeded by the fact that the best ground lay near Center Creek, and no work could be done during the wet season (1) The Carthage camp, which at that time consisted of scattered mines between Carthage and Sarcoxie, never contained more than six operating mines at a time, and those immediately near the railroad depot at Carthage did not produce before 1889 (1)

According to the MDNR Study, between 1902 and 1907, mechanized volume-mining methods were developed which encouraged development of the low-grade, extensive sheet-ground ores (58) Yearbooks from 1907 to 1916 provide detailed accounts of the mining activities in southwestern Missouri by mining district, identify the largest producers, and discuss new developments which occurred within each district during this period (7 - 15)

The 1907 yearbook was the first in the yearbook series to contain detailed descriptions of mining activities in the area, and to document the expansion of mining in southwestern Missouri (7) The 1907 yearbook named several new mining districts which were not discussed in the 1894 Report (1) These new mining areas included Cave Springs, Sarcoxie-Reeds, and Duenweg-Porto Rico (7) The

changing of the names of three mining camps (Belleville to Zincite, Webb City-Carterville to Webb City-Carterville-Prosperity and Lehigh to Carl Junction) suggests a shift in principal mining areas, and/or expansion in the size of these camps (7)

In the 1910 yearbook, the Alba camp reported a large increase in production due to new producers in the northwestern portion of the camp, and was referenced as the Alba-Neck City district (9) Also in the 1910 yearbook, the Sherwood camp was expanded to include the Thoms Station camp, and rich strikes were reported in this area (9) The 1911 yearbook indicated that extensive prospecting and leasing in the Sherwood-Thoms Station district, led to this district achieving more prominence, advancing it from thirteenth to fifth in production amongst southwest Missouri districts (10)

The 1911 to 1914 yearbooks reference the Zincite district as the Zincite-Smithfield district, due to increased operations in the northern portion of the district (10 - 13) In 1915 and 1916, the Zincite district was referenced as the Zincite-Klondike district (14 - 15)

According to the 1907 to 1916 yearbooks, Webb City-Carterville-Prosperity led southwestern Missouri as the most productive district, followed by Joplin (7 - 15) In the 1912 to 1915 yearbooks, districts were ranked according to productivity (11 - 14) Although fluctuations occur, the districts of Duenweg-Porto Rico, Alba-Neck City, Thoms Station, and Oronogo ranked within the top five, and in 1915, Zincite-Klondike ranked seventh (11 - 14) The remaining districts were not ranked (7 - 15)

According to the 1918 yearbook, the end of World War I brought an end to price agreements, which caused major drops in ore prices (17) The 1918 yearbook notes a rapid decline of mining activity and production in Missouri, although Oklahoma and Kansas were able to maintain high levels of productivity (17) There was a drastic decrease in the number of active mining operations discussed in the 1918 and subsequent yearbooks for the Jasper County mining districts (17 - 57) However, the 1918 yearbook discusses the emergence of a new district, Waco, located along the Kansas-Missouri border (17)

According to the yearbooks, from 1919 to 1951, mines near Waco and Oronogo were the principal ore producers in Missouri (18 - 49) This series of yearbooks also indicate that the area near Webb City and Carterville, once the area with the largest production, was reduced to sporadic production, ranging from small scrapping and drilling operations, to production from tailings (18 - 49)

In the late 1920's, operations near Smithfield and the Kansas/Missouri state line, were the major ore producers in Jasper

County (24 - 29) Some mining activity was also conducted near Fidelity (24 - 29) Carthage, Carl Junction, Alba-Neck City, and Belleville reported either no production, or one or two producers each year (24 - 29) Subsequent to 1918, there is no reference to mining activities at Sarcoxie, Reeds, Sherwood, Porto Rico, or Prosperity within the yearbooks (18 - 57)

The 1957 yearbook names only one producer of lead and zinc ores in Jasper County (55) The MDNR Study indicated that the last significant production in Missouri occurred in 1957, but intermittent output continued into the late 1960's (58) The 1960 yearbook reported that for the third consecutive year, no zinc or lead ore was produced in southwestern Missouri (56) No mention of zinc or lead ore production in Jasper County was made in the 1965 yearbook (57)

B Description of Mining Districts

In discussions of the history of the Jasper County portion of the Tri-State Mining Area, the yearbooks and the 1894 Report provide general location information regarding mining activities by referencing camps or mining districts (1, 2 - 57) The Jasper County Mining Database, prepared by TechLaw, also uses mining districts to identify the location of mining activities of specific companies

The mining districts are named for towns in the vicinity of the mining activity, and the names and boundaries of various districts changed through time as the mining territories expanded and shifted The 1894 Report specifically defines the mining districts at that time (1) In the yearbooks from 1907 to 1916, mining districts are defined in a consistent fashion, so that the history of mining companies in those districts can be traced through time (7 - 15)

Subsequent to 1917, the yearbooks no longer used the earlier district designations, and began to describe the location of mining activities by referencing nearby towns (17 - 57) In some cases, the same property was described as being near different towns, from one year to the next, depending on how general a description was provided each year For example, "near Joplin" was sometimes used in the later yearbooks to describe the location of mining activity in the Joplin district, as well as in the Thoms Station, Cave Springs, and Smithfield districts In other yearbooks, the same property may be referenced as near one of these other towns For mining activity discussed in the later yearbooks, however, it was

possible to discern in which of the "districts" operations were actually conducted by tracing the history of the property back to the period of 1907 to 1916. Another method for determining the actual mining district for a particular operation, was to cross-reference the mine name to the mine name in the Mine Location Index (Appendix B)

This report includes four figures showing the location of the mining districts referenced in the 1894 Report and the yearbooks (Appendix C). Figure 2, prepared by TechLaw from maps and narrative in the 1894 Report, diagrams the extent of the mining districts in Jasper County as of 1894. Figure 2 represents the only specific mining activity location information contained within the documents reviewed by TechLaw for the eastern portion of Jasper County. Figure 3 shows the Webb City-Carterville district as it was defined in the 1894 Report, and specific tracts of land within this district. Figure 4 was taken directly from the 1894 Report, and shows the tracts of land within the Joplin and Belleville districts. Figure 5 diagrams the approximate boundaries of the major mining districts in the western section of Jasper County. These district boundaries were defined in the yearbooks, and by a comparison of mine names, by district, from the yearbooks, to mine names listed in the Mine Location Index (Appendix B).

As shown on Figure 5, it was not possible to define the exact boundaries of the mining districts within the far western portion of Jasper County (Joplin, Zincite-Smithfield, Cave Springs, Thoms Station-Sherwood, and Carl Junction). Within this area, certain mines located between these districts were referenced in the yearbooks in more than one district. For this reason, the district boundaries presented in Figure 5 should be considered approximations only.

There are twelve major mining districts defined in Jasper County in the 1894 Report and the yearbooks. Each district is described as follows:

1 Joplin According to the 1894 Report, this district includes mining activity within the town limits of Joplin, mining conducted to the east of Joplin, and the Tuckahoe Mines located north of Joplin (1). (See Figure 2 and Figure 4). The yearbooks from 1907 to 1916 further define this district as including areas west of Joplin, as far as Central City (7 - 15). As illustrated in Figure 5, the Joplin mining district was the most extensive of the Jasper County districts.

2 Thoms Station-Sherwood According to the 1894 Report, the original Sherwood mines were located about one mile southeast of Lehigh, and the 1883 yearbook indicated that the Sherwood diggings were four miles north of Joplin (1, 2). None of the maps obtained by TechLaw show the location of the town of Sherwood.

According to the 1910 yearbook, the Thoms Station portion of the camp was situated two and a half miles north of Joplin along the Kansas City Southern Railroad (9) The specific location of this camp on Figure 5 was determined only by comparison of mine names in the yearbooks to the Mine Location Index It was not possible to define a precise boundary between the Joplin district and the Thoms Station-Sherwood district

3 Zincite-Smithfield This district was also referenced in the yearbooks as the Zincite, Zincite-Klondike, and Smithfield districts According to the 1894 Report, this district was originally known as the Belleville district and included the mines within East Hollow and West Hollow, located southeast of Belleville (1) A comparison of the location of mines discussed in the Zincite district, to the location of the Belleville and Hollow mines, indicate that the Belleville district is part of the Zincite district According to the 1914 yearbook, the mines of this district include those in the territory south of Zincite, along the western border line between Missouri and Kansas to the north of Smithfield (13) None of the maps obtained by TechLaw show the location of Zincite Only that portion of the district described in the yearbooks which could be confirmed by comparison of mine names to the Mine Location Index, has been outlined in Figure 5

4 Cave Springs No general location information for this district was given in either the 1894 Report, or the yearbooks, and the location of this district within Figure 5 was obtained strictly through the comparison of mine names in the yearbooks to the Mine Location Index

5 Carl Junction According to the 1894 Report, mining in this camp began near Lehigh, situated a mile west of Carl Junction A comparison of the mining maps obtained from the Silva Library to the U S Geological Survey (USGS) maps shows that Lehigh is now known as Stringtown (59 - 65) The 1907 and subsequent yearbooks reference the "old Lehigh diggings" when describing operations in the Carl Junction district (7 - 57) The 1912 yearbook describes operations four miles north of Carl Junction as part of this district (11) Further boundaries for this district were made through a comparison of mine names in the yearbooks with the Mine Location Index

6 Oronogo The 1908 yearbook describes the Oronogo district as that part of the Oronogo-Duenweg, sheet-ground territory lying north of Center Creek (8) Comparison of mine names in the yearbooks with the Mine Location Index confirms this boundary The growth of the Oronogo district can be seen from a comparison of Figure 2 and Figure 5 (Appendix C)

7 **Duenweg-Porto Rico** The yearbooks describe this district as that portion of the Oronogo-Duenweg, sheet-ground belt lying south of Porto Rico (7 - 15) Although Porto Rico cannot be found on the current USGS maps, the mining maps from the Silva Library show its location (59 - 64) A comparison of mine names in the yearbooks to the Mine Location Index were used to define the northern boundary, although some of the larger mines do cross this boundary The westerly border of this district was defined by the lack of significant mining activity between Joplin and Porto Rico, as noted on maps contained in the MDNR Study (58) In the yearbooks, reference to operations in the Scotland camp, when any, are included under this district According to the 1894 Report, the Scotland camp also included the Burch camp (1) Later yearbooks reference operations at Fidelity, which appears to be in the same location as the Burch camp (1) Figure 2 shows the location of the Scotland and Burch camps as of 1894, and Figure 5 shows the location of the Duenweg-Porto Rico district, as defined above

8 **Webb City-Carterville-Prosperity** The 1894 Report defines this district as including mines within the limits of Webb City and Carterville and the vicinity (1) According to the yearbooks, this district included the majority of the sheet-ground territory in Jasper County (7 - 15) The western boundary was defined by a lack of mining activity between this district and those to the west The location of this district is shown on Figure 5

9 **Alba-Neck City** This district is located apart from the other districts in Jasper County A comparison of Figure 2 and Figure 5 illustrates the growth of this district over time

10 **Waco** The Waco district also is located apart from the other districts in Jasper County The boundaries of the Waco district are illustrated in Figure 5

11 **Carthage** According to the 1894 Report, and as shown in Figure 2, mines in this district were widely scattered from Reeds to northwest of Carthage (1) The western boundaries for this district, as illustrated in Figure 5, show only a portion of the Carthage district, as defined through a comparison of mine names in the yearbooks with the Mine Location Index

12 **Sarcoxie-Reeds** According to the yearbooks, this district lies in the area between Reeds and Sarcoxie (7 - 15) No more specific location information was available for this district The location of these towns is illustrated in Figure 2

III DATABASE DEVELOPMENT

In order to organize the mining activity information contained in the yearbooks and the 1894 Report, TechLaw created the Jasper County Mining Database. The narratives in these two sources identified specific mining companies involved in mining operations in Jasper County. This information included the time period in which the activity occurred, the owner and/or lease holder of the property on which the activity was conducted, and the district in which the mining occurred. Other available information included the nature of the mining activity, the capacity of the mill(s), and the number of shafts in operation.

Due to the volume of mining activities conducted in southwestern Missouri, a complete description of mining activities was not included in each edition of the yearbooks. Information included in the yearbooks for a given mining operation, was more or less specific over time. The database was developed to allow each reference to a particular mining operation to be listed chronologically, to present an overall picture of that mining company's operations.

For each reference in the 1894 Report or yearbook(s) to a particular mining operation, a record was created in the database. Each record was comprised of the mining company name, the year of the reference, the mining district, the type of activity, and a comments field for presenting miscellaneous information.

The type of mining activity was characterized within the database by the use of a series of codes which are explained below.

TRAC - This code was used to indicate that the company had an interest in the mining property, although from the narrative, it was not clear if the company actually conducted mining or milling operations itself, or other companies actually worked on the property. The narrative stated only that the company's tract produced, or that the company had a mine.

MINE - This code was used to indicate that the narrative specifically stated that a company operated a mine or conducted mining operations.

MILL - This code was used to indicate that the narrative stated that the company had a mill or operated a mill, to treat mined ore. It is not clear whether the company actually conducted the mining operations and milled its own ore, or milled ore mined by other companies.

PROD - This code was used to indicate that the narrative stated that the company produced ore or reported production. It is not clear whether the reported production resulted from mining operations conducted by the company itself, or if the mining was conducted by another company.

The comments fields in the database were used to hold miscellaneous information about the company contained in the yearbook reference. For example, the name of the mine(s) which were on its property, the number of shafts in operation, the number and/or capacity of mills in operation, and former mine names were included in the comments fields when available. Other information which may be found in the comments fields would include the name of the property owner, and/or the lease holder of the property on which the company operated.

As indicated in Section II B, mining activity location information within the 1907 to 1916 yearbooks is presented by mining district (7 - 15). However, latter editions of the yearbooks did not use these district references in a consistent fashion (16 - 57). In order to continue to use the district designations in the database, TechLaw cross-referenced each latter year entry with an earlier year entry in order to determine the appropriate district designations. Companies which could not be cross-referenced to a specific district, were entered into the database under the default district, "Jasper County".

Specific production information was rarely provided for the mining companies referenced in the yearbooks. In certain cases, ore producers were characterized by the amount of their production within a district, by such terms as "large", "moderate", and "small". Due to the incompleteness and uncertainty surrounding this production information, no attempt was made to include this information in the database.

In addition to their use in identifying mining companies active in Jasper County, the database printouts also serve as an index to the yearbooks and 1894 Report. The 1894 Report and the 1886 and 1887 yearbooks provide actual production figures for many companies (1, 4, 5). In many cases, additional information about the company (for example, relative productivity) can be obtained from the yearbooks for the years referenced for each company.

IV CONCLUSIONS AND RECOMMENDATIONS

This report summarizes research conducted by TechLaw into mining activities in Jasper County, Missouri. The focus of this research was to identify mining companies which operated in Jasper County as parties potentially responsible for the contamination of the Jasper Site. EPA suspended this research prior to its completion, however, and so the actual identification of potentially responsible parties should be considered preliminary. For this reason, the mining companies identified through TechLaw's research have not been listed in this report as potentially responsible parties.

In its research, TechLaw has identified over 1,000 mining companies active in Jasper County, Missouri, from the mid-1800's to 1965. As can be seen from the database printouts presented as Attachments I, II, and III, the period of time that these mining companies were involved in mining ranged from one or two years to decades. Due to the adverse economic conditions which have affected the lead and zinc mining industry in Jasper County, and the length of time which has passed since many of the identified companies operated, it is likely that few of these companies are currently in existence.

In order to continue research to identify viable potentially responsible parties for the Jasper County site, TechLaw makes the following recommendations:

1 Conduct Corporate Status Research Corporate status research should be conducted to identify those mining companies listed in the Jasper County Mining database which are still in existence.

2 Obtain Title Documentation In order to obtain additional evidence linking specific mining companies to mining activities in Jasper County, title documents should be obtained from Jasper County property records. These records are organized through a grantor/grantee index, which would allow access to these records by referencing the list of mining companies in the database. These title documents also would allow mining activity locations to be defined more precisely.

3 Conduct Additional Analysis of Collected Documents A detailed comparison of the list of mines included in the Mine Location Index (Appendix B), to the mines referenced in the Jasper County Mining database, could allow the mining activities of specific companies to be defined more precisely.

4 **Review Responsible Party Information Developed for the Kansas and Oklahoma Portions of the Tri-State Mining Area** Due to the collapse of lead and zinc mining in the Missouri portion of the Tri-State Mining Area in 1918, it is possible that certain mining companies moved their operations to Kansas and Oklahoma. TechLaw understands that EPA has previously conducted potentially responsible party research into the mining activities in these states. Current corporate status information may be contained in these reports for some of the mining companies listed in the Jasper County Mining Database.

APPENDIX A
DOCUMENT REFERENCES

- 1 Missouri Geological Survey, Volume VII, Lead & Zinc Deposits, Section 2, by Arthur Winslow, pp 544-595, 1894
- 2 Mineral Resources of the United States, Part I, Metal Series, U S Geological Survey, 1883/1884
- 3 Mineral Resources of the United States, Part I, Metal Series, U S Geological Survey, 1885
- 4 Mineral Resources of the United States, Part I, Metal Series, U S Geological Survey, 1886
- 5 Mineral Resources of the United States, Part I, Metal Series, U S Geological Survey, 1887
- 6 Mineral Resources of the United States, Part I, Metal Series, U S Geological Survey, 1893
- 7 Mineral Resources of the United States, Part I, Metal Series, U S Geological Survey, 1907
- 8 Mineral Resources of the United States, Part I, Metal Series, U S Geological Survey, 1908
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- 17 Mineral Resources of the United States, Part I, Metal Series,
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U S Geological Survey, 1927
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U S Geological Survey, 1928
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U S Geological Survey, 1931
- 31 Mineral Yearbook, U S Bureau of Mines, 1932/33
- 32 Mineral Yearbook, U S Bureau of Mines, 1934
- 33 Mineral Yearbook, U S Bureau of Mines, 1935
- 34 Mineral Yearbook, U S Bureau of Mines, 1936

35 Mineral Yearbook, U S Bureau of Mines, 1937
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57 Mineral Yearbook, U S Bureau of Mines, 1965

- 58 Study of Stability Problems and Hazard Evaluation in the Missouri Portion of the Tri-State Mining Area, by Michael C McFarland and James C Brown, Jr , Missouri Department of Natural Resources, Division of Geology & Land Survey, April 1983
- 59 Geological Map Showing Mining and Mineralized Areas, Missouri, Jasper-Newton Counties, Township 27 North, Range 33 West and Township 27 North, Range 34 West, prepared by the State of Missouri Geological Survey and Water Resources, 1916 to 1921
- 60 Geological Map Showing Mining and Mineralized Areas, Missouri, Jasper-Newton Counties, Township 27 North, Range 32 West, prepared by the State of Missouri Geological Survey and Water Resources, 1921 to 1922
- 61 Geological Map Showing Mining and Mineralized Areas, Missouri, Jasper County, Township 28 North, Range 32 West, prepared by the State of Missouri Geological Survey and Water Resources, 1920
- 62 Geological Map Showing Mining and Mineralized Areas, Missouri, Jasper County, Township 29 North, Range 33 West and Township 29 North, Range 34 West, prepared by the State of Missouri Geological Survey and Water Resources, 1919 to 1922
- 63 Geological Map Showing Mining and Mineralized Areas, Missouri, Jasper County, Township 28 North, Range 33 West and Township 28 North, Range 34 West, prepared by the State of Missouri Geological Survey and Water Resources, 1916 to 1919
- 64 Geological Map Showing Mining and Mineralized Areas, Missouri, Jasper County, Township 29 North, Range 32 West, prepared by the State of Missouri Geological Survey and Water Resources, 1922
- 65 U S Geological Survey Maps

APPENDIX B

MINE LOCATION INDEX

This index of mine names was compiled from maps contained in the 1894 Report, the MDNR Study, and the mining maps obtained from the Silva Library (1, 58 - 64). The locations of these mines are presented in terms of Township (T), Range (R), Section (S), and Quarter Section (QS). Document reference numbers are presented in the right-hand column. The document reference numbers are contained in parenthesis. Numbers to the right of the parenthesis are mine location references from the referenced maps.

MINE NAME	T	R	S	QS	Reference
10 O'Clock	28	32	28	NE	(61)-141
1909 Mine	29	32	6	SW	(64)-49
1915 Mine	28	34	14	SE	(63)-203
4 and 6	27	33	14	NW	(59)-143
A No 1	27	33	14	SW	(59)-147
A B R	28	32	28	NE	(61)-139
A B C Mine	28	33	32	SE	(63)-156
A W C No 1	27	33	6	SE	(59)-43, (58)-10, 11
A W C No 2	27	33	6	SE	(59)-44
A W C No 3	27	33	6	SE	(58)-12
A W C No 3	27	33	7	NE	(59)-45
A W C No 5	27	33	6	SE	(59)-38
Aberdeen	28	34	23	NW	(63)-196
Acton Shaft	28	33	34	SW	(1)
Ad Valorem	27	33	16	SE	(59)-163
Adams & Hicks	27	34	24	NE	(58)-2
Adams & Hicks	27	34	24	SE	(59)-236-N, (58)-3
Adelaide	27	33	4	SE	(59)-112
Adirondack	27	33	9	NE	(59)-79
Aelor M Co	28	32	17	SE	(1)
After Glow Mine	28	32	6	SW	(58)-8
Airdale	27	33	6	NE	(59)-35, (58)-3, 4, 5
Alabama	28	32	34	NE	(61)-203
Alabama	28	32	34	NW	(61)-203, (58)-2, 3
Alba Co	29	32	16	SE	(1)
Alba Mines (district)	29	32	15	SW	(1)
Alba Mines (district)	29	32	16	SE	(1)
Albatross	29	32	22	NW	(64)-41

<u>MINE NAME</u>	<u>T</u>	<u>R</u>	<u>S</u>	<u>OS</u>	<u>Reference</u>
Albatross	29	32	15	SW	(64)-41
Albatross Mining Co	29	32	15	SW	(1)
Albert	28	34	25	SW	(63)-229
Albert F	28	32	28	NW	(61)-124
Allegheny	29	34	23	NE	(62)-25
Allegheny-Western	29	34	14	SE	(58)-2,3
Allegheny-Western	29	34	23	NE	(58)-3,4,5
Amalgamated	27	33	4	NE	(59)-3
Amblon	28	33	33	SE	(58)-2
American Beauty	28	32	6	SW	(61)-3, (58)-2
American Beauty	28	32	6	SE	(61)-3
American Davey	28	32	21	NE	(61)-77
American Davey	28	32	21	NW	(61)-77
American Davey	28	32	16	SW	(61)-77
American Davey	28	32	16	SE	(61)-77
American Davies Mine	28	32	21	NW	(58)-44
American Davies Mine	28	32	21	NE	(58)-45
American M & E Co	28	33	21	NE	(63)-80
American Mill, E P	29	32	31	SW	(64)-62
Anderson	28	33	33	SW	(63)-136
Anna	27	33	4	SE	(59)-113
Anna Linda	29	32	8	NE	(64)-11
Anna Linda	29	32	8		(64)-11
Annabell	27	32	13	SE	(60)-58
Anne Baxter Mine	27	33	15	SW	(58)-1
Appleknocker	28	32	34	NW	(58)-11,12
Apple Knocker, Old	28	32	34	NW	(61)-185
Argo	28	32	21	NW	(61)-73
Arkansan	28	33	33	NW	(63)-131
Arkansas (George M)	28	32	28	NW	(61)-120
Armiraity Zinc Co	27	33	14	SE	(59)-159
Athletic	28	33	12	SE	(63)-10
Athletic	27	32	3	NW	(60)-14
Athletic	27	32	4	NE	(60)-14
Atlas	28	32	21	SE	(61)-101
Atlas Shaft (Boston Get)	28	32	21	SE	(58)-4
Attic C	28	32	31	NW	(61)-162
Audrain	27	33	4	SE	(59)-101
Avondale	28	32	21	SW	(61)-115
Aylor, J W land	28	32	30	SE	(1)
Aylor, J W land	28	32	30	NE	(1)
B and C	27	33	4	SE	(59)-100
B and H No 1	28	33	33	SW	(63)-134
B and H No 2	28	33	33	SW	(63)-137
Baby Girl	27	33	16	NE	(59)-78
Bacon	27	33	13	SW	(59)-158
Bacon and Bailey	28	32	31	NW	(61)-160
Baker	28	33	33	NW	(63)-144

<u>MINE NAME</u>	<u>T</u>	<u>R</u>	<u>S</u>	<u>QS</u>	<u>Reference</u>
Baker Shaft, Possum Hol	28	33	33	NE	(1)
Ball Gunning	29	32	8	NE	(64)-10
Baltic	27	32	10	NW	(60)-18, (58)-1
Baltic	27	32	3	SW	(60)-18
Baltimore	27	33	4	NW	(59)-18, (58)-5, 6
Banty Hen	27	33	7	SW	(59)-215
Barker Shaft	27	33	11	SW	(1)
Barnett & Walker	27	33	18	SE	(59)-223
Barnsdall No 14	29	34	14	SW	(62)-14
Barnsdall No 2	29	34	22	NW	(62)-22
Barnsdall No 2	29	34	22	NE	(58)-1, 2, 3, 5, 6, 15, 16
Barr and Son	28	34	25	NE	(63)-208
Batavia	28	32	21	SE	(61)-102
Battle Ax	29	32	16	NE	(64)-23
Beacon Hill	28	33	32	NE	(63)-153
Beasley Shaft	28	32	17	NW	(1)
Belleville Mining Co	28	34	25	NE	(1)
Ben B	27	33	6	SW	(59)-49, (58)-13
Ben Franklin	28	32	17	SW	(61)-55, (58)-35-38
Bentley Mines	28	34	36	NE	(1)
Berkey Tailing Mill	29	32	10	SW	(64)-63
Bertha A	28	33	12	SE	(63)-11
Bertha B	27	33	11	SW	(59)-134
Betsy Jane	28	34	36	SW	(63)-250
Beulah C	28	32	17	SW	(61)-57
Beulah Mine	28	32	17	SW	(58)-26
Beville M Co	28	31	27	NE	(1)
Big 3	27	33	16	NW	(59)-64
Big 4	27	33	4	SE	(59)-114
Big Dick	28	32	31	SW	(61)-158
Big Eight	27	33	4	NW	(59)-11
Big Elm M Co	28	32	21	SW	(1)
Big Hit	28	32	17	SE	(61)-67
Big Indian	29	32	6	SE	(64)-46
Big Irishman	28	33	22	SE	(63)-45
Big Joe, Old (Napoleon)	28	33	22	NW	(63)-47
Big Kate Mine	29	32	8	NW	(58)-6-8
Big Mixer	28	34	25	SW	(63)-228
Big Run Mine	28	33	33	NE	(1)
Big Western	28	33	16	SW	(63)-30
Billie B	28	33	19	NE	(63)-75
Bird Dog	28	32	17	NW	(61)-41
Black Calf	27	32	10	SE	(60)-45
Black Cat	28	32	7	NE	(61)-10
Black Cat	28	34	11	NE	(63)-189, (58)-1
Black Diamond, Old	27	33	3	SW	(59)-105

MINE NAME	T	R	S	QS	Reference
Black Hawk	28	33	29	SE	(63)-117
Black Jack East	27	33	20	NW	(58)-5
Black Jack West	27	33	19	NE	(58)-1
Blackberry	27	33	4	NE	(59)-4
Blair Boy	28	32	31	NW	(61)-163
Blizzard	28	34	36	NW	(63)-236
Bloc City	28	34	36	NW	(63)-232
Block City Mine	28	34	36	NW	(1)
Blossom	28	34	25	NE	(63)-217
Blue Bird	27	33	3	SW	(59)-121
Blue Rock	29	34	14	SW	(62)-13, (58)-4, 5, 6
Blue Stern	27	33	9	NW	(59)-76
Blue Wing	28	32	17	SE	(61)-65
Bob Ingersoll	28	33	32	SE	(63)-169
Bob McGee	27	32	10	NW	(60)-51
Bonnie Bell	28	33	21	NW	(63)-61
Boss	27	33	11	SE	(59)-188
Boston Get There-Atlass	28	32	21	SE	(58)-4
Boston Get There-Phoenix	28	32	21	SE	(58)-3
Boston Get There-Walkers	28	32	21	SE	(58)-2
Boston Get There-Wilguss	28	32	21	SE	(58)-5
Boston-Cherokee	28	33	32	NE	(63)-147
Boulder Mill	27	33	29	SW	(59)-228-N
Boulder Mining Co	28	33	33	NW	(63)-126
Bradley No 2	27	33	5	NW	(59)-32
Brewington	27	33	11	NE	(59)-192
Briar Patch	28	34	24	NW	(63)-204
Brick Mill Mine	28	32	17	SW	(58)-17
Brock Mine	27	31	7	SE	(1)
Broken Hill	28	33	22	NW	(63)-82
Brookfield	27	33	14	SW	(59)-146
Brooklyn	27	32	4	SE	(60)-22
Brooklyn	28	33	33	NW	(63)-121
Brown	27	33	9	NE	(59)-81
Brown and Company	29	32	10	SW	(64)-32
Bryant Mine	28	33	7	SE	(58)-6, 7
Bryant Mine	28	33	7	NE	(58)-7
Buck L and Z Co	28	34	14	SE	(63)-200
Buckeye	27	33	9	SE	(59)-72
Buckeye Mining Co	28	34	25	SW	(1)
Buckeye Mining Co	28	34	25	SE	(1)
Budweiser	28	33	21	NE	(63)-79
Buffalo Bill	27	33	4	SE	(59)-115
Bull Dog	27	32	17	SW	(60)-72
Bull Durham	28	33	17	SE	(63)-24
Bull Frog	27	33	4	NE	(59)-6, (58)-2
Bulldog	28	32	6	SW	(61)-7, (58)-9, 10

MINE NAME	T	R	S	QS	Reference
Bumble Bee	27	33	13	NW	(59)-164
Bunker Hill	27	33	5	NE	(59)-21
Bunker Hill	27	33	4	NW	(59)-21
Burch	27	32	11	SW	(60)-55
Burch Diggings	27	31	11	NW	(1)
Burch M Co	28	32	16	SW	(1)
Burgner land	28	32	20	NE	(1)
Burgner land	28	32	20	SE	(1)
Butler	27	33	11	NW	(59)-128
Buzzard	29	32	9	SW	(64)-14
Byers, Conner & Murphy	27	33	4	SE	(1)
C and D	28	32	28	SW	(61)-128, (58)-9
C and B	28	33	21	NW	(63)-60
C and S (Old Imperial)	28	34	35	SW	(63)-245
C and S (Old Imperial)	28	34	35	NW	(63)-245
C and S No 2	28	33	12	NE	(63)-7
C and S No 5	28	33	12	NE	(63)-6
C C	28	33	32	SE	(63)-166
Calumet Zinc Co	29	32	8	NW	(64)-4
Cantaline	28	34	36	NW	(63)-235
Captain	27	33	3	SW	(59)-93
Carico	27	33	7	SE	(59)-216
Carlatt	28	32	19	NE	(61)-110
Carlisle	27	33	11	SW	(59)-135
Carlstead Tailing	28	32	29	NE	(61)-213
Carlyle	28	34	25	SE	(63)-259
Carthage Mines	28	31	8	NE	(1)
Cataract	27	33	5	NW	(59)-29
Cayle King & Co	27	33	14	NW	(59)-218
CC M Co	28	32	17	NW	(1)
Center Creek M Co Mine	28	32	18	SE	(58)-5, 6, 7
Center Creek M Co Mine	28	32	17	SW	(58)-29-32, 34
Center Creek M Co Mine	28	32	17	NW	(58)-63
Center Creek M Co Mine	28	32	18	NE	(58)-3, 4, 5
Center Creek Mines	29	32	31	part	(1)
Center Creek Mines	29	33	36	part	(1)
Center Creek Mining Co	28	32	18	NE	(1)
Center Creek Mining Co	28	32	18	SE	(1)
Center Creek Mining Co	28	32	17	SW	(1)
Center Creek Mining Co	28	32	17	NW	(1)
Central	29	32	15	NW	(64)-39
Centralia	28	33	21	NW	(63)-59
Century	27	32	3	SW	(60)-20
Century Zinc Co	29	32	8	NE	(64)-7
Chapel	28	32	34	NW	(61)-193
Chapel	28	32	34	NE	(61)-193
Chapman Bros	28	32	8	SW	(61)-39
Chapman Bros	28	32	8	SE	(61)-39

MINE NAME	T	R	S	OS	Reference
Chapman Land Co Mine	28	32	8	SW	(58)-1,2
Chapman, Lennan & Carter	28	33	15	SW	(63)-36
Chapman, Lennan & Carter	28	33	22	NW	(63)-36
Charter Oak	28	32	21	SE	(61)-103
Charter Oak	28	32	17	SE	(61)-60, (58)-9-13
Chase	27	33	12	SW	(59)-177
Chatham M Co (440 ac)	28	32	19	SE	(1)
Chatham M Co (440 ac)	28	32	20	NW	(1)
Chatham M Co (440 ac)	28	32	18	SE	(1)
Chatham M Co (440 ac)	28	32	17	SW	(1)
Chatham M Co (440 ac)	28	32	20	NE	(1)
Chatham M Co (440 ac)	28	32	20	SE	(1)
Chatham M Co (440 ac)	28	32	20	SW	(1)
Cherokee	28	33	28	NE	(63)-96
Chicago Consolidated	28	33	32	SE	(58)-3,4
Chicago-Joplin	27	33	8	SE	(59)-54
Chicago-Lehigh	28	33	7	SE	(63)-16, (58)-5
Chicago-Lehigh	28	33	7	NE	(63)-16, (58)-1,2,3,4
Childress	27	33	19	NE	(59)-207-N
Childress&Messenger	27	34	12	NE	(59)-233
Childress&Messenger	27	34	12	SE	(59)-233
Chitwood Joplin	28	33	32	NE	(63)-119
Chitwood-Bessie	28	33	32	NE	(63)-146
Chrisman	29	32	9	SE	(64)-28
Church	28	33	7	SW	(63)-17
Church & Company Mine	28	32	6	SW	(58)-11 to 15
Church - Mitchell	28	32	33	NW	(61)-170
Cinamo	28	32	29	NE	(61)-156
Cisco No 1	28	32	7	NW	(61)-29
Cisco No 3	28	32	19	SE	(61)-112
Clara Bell	28	33	31	NW	(63)-109
Clear Mine	27	32	16	NE	(60)-71
Clear-Peacher	27	32	16	NW	(60)-42
Cliff	28	33	33	SW	(63)-132
Cliffwood	29	33	1	NE	(62)-2
Clover Leaf	27	33	3	SW	(59)-98
Coahella	28	32	33	SE	(61)-175, (58)-6
Coahella	28	32	33	NE	(61)-175, (58)-5,6
Coal Mine	29	32	10	SE	(64)-31
Coatts and Ortt	28	33	21	SW	(63)-57
Coatts and Ortt	28	33	21	SE	(63)-57
Coble	28	33	21	NE	(63)-81
Cock Robin	28	33	32	SE	(63)-168, (58)-1
Colgair	28	33			(63)-104
Colony (now Taneycomo)	28	32	34	NE	(61)-204
Colorado	28	34	35	SE	(63)-242
Columbia Mining Co	28	33	20	NE	(63)-184

MINE NAME	T	R	S	QS	Reference
Combination	27	33	11	NE	(59)-194
Comet	28	32	17	NW	(61)-51, (58)-51-62
Concord Mine	28	32	17	SE	(58)-4, 5
Condor	27	33	4	NW	(59)-15, (58)-3
Conolidated Mining Co	27	33	2	NW	(1)
Conolidated Mining Co	28	33	35	SW	(1)
Conqueror	28	33	32	SE	(63)-175
Consolidated	29	32	24	SW	(64)-42
Consumers	27	33	7	NE	(59)-46
Continental Mine	28	32	21	NW	(58)-35-43
Cook Forty	27	33	2	SE	(1)
Coon, Old	27	33	14	SE	(59)-154
Cooper and Peters	28	33	32	NW	(63)-115
Copley	28	34	25	SE	(63)-258
Cora Lotta Mining Co	27	33	1	SW	(1)
Cornell Shaft	28	31	18	NE	(1)
Cornfield	28	32	20	NE	(61)-69, (58)-1, 2
Cornfield M Co	28	32	17	SE	(1)
Cornfield M Co	28	32	20	NE	(1)
Coronation Mine	28	32	34	SW	(58)-7
Cottonwood Mines	28	33	31	NW	(1)
Cottonwood Mines	28	33	31	NE	(1)
Cowbell	27	33	11	SW	(59)-138
Cowhead	27	33	9	NE	(59)-118
Cox and Pierce	27	33	12	SW	(1)
Coyne	28	32	20	SE	(61)-85
Coyote	27	33	6	NE	(59)-34, (58)-1, 2
Crackerjack	28	33	33	SW	(63)-135, (58)-5
Croesus	28	32	21	SW	(61)-208
Crossman Mines	27	32	7	SW	(1)
Crossroads	28	33	21	SW	(63)-65
Crown Crest	27	32	10	NE	(60)-52
Crown Crest	27	32	10	SE	(60)-52
Crown Point	27	32	10	NE	(60)-61
Crusan Mill	28	32	7	SW	(61)-216
Crusan Mill	28	32	7	NW	(61)-216
Cumberland	28	33	32	NE	(63)-118
Cumberland	28	32	28	NW	(61)-119, (58)-15
Cumberland	28	32	17	SE	(61)-62
Cygni M Co (Old M&S)	28	32	28	NW	(61)-121
D and Y	28	33	20	NW	(63)-67
D C and E	28	33	1	SE	(63)-4, (58)-2
Dagley-Peck-Randall	27	33	14	NE	(59)-219
Daisy Bell	28	34	23	NW	(63)-197
Damfine	27	33	4	NW	(59)-10
Damfine	27	33	4	NE	(59)-10
Danglade	28	32	28	NW	(61)-127
Danglade	28	32	28	SW	(61)-127, (58)-8

MINE NAME	T	R	S	QS	Reference
Danville M Co	28	32	16	NE	(1)
Danville M Co	28	32	16	SE	(1)
Davey land	28	32	16	NW	(1)
Davey land	28	32	16	SW	(1)
Davey land	28	32	16	SE	(1)
Davis mine	28	30	29	NE	(1)
Davy Crockett	29	32	24	SW	(64)-43
Davy Crockett	29	32	24	SE	(64)-43
Daylight	28	32	17	NW	(61)-44, (58)-74-76
De Graff	28	34	36	SW	(63)-251
Dead Horse	27	33	14	NE	(59)-175
Dead Horse	27	33	11	NE	(59)-199
Dead Mule	27	33	9	NE	(59)-117
Deep Rock	28	33	32	SE	(63)-173
Deerpark Mining Co	27	33	26	SE	(59)-227-N
Diamond Jack	28	33	32	SE	(63)-150
Diamond Mining Co	27	33	16	SE	(1)
Dickey	28	32	20	NW	(61)-90, (58)-16
Dinger	28	32	17	NW	(61)-42
Disbrow	28	32	17	NW	(61)-43
Dixie	28	32	29	NE	(61)-142
Dominion	28	32	21	SW	(61)-116, (58)-26
Dorothy	27	33	4	SE	(59)-90
Double Eagle	27	32	3	NE	(60)-4, (58)-2
Dudley's Mill	28	29	17	part	(1)
Duffelmeyer	27	33	11	SE	(59)-190
Duffelmeyer	27	33	11	NE	(59)-190
Duluth Mine	28	32	17	SW	(58)-27, 28
Dundas	28	33	31	NE	(63)-112
Duquesne					(59)-211-N
Duquesne	27	34	24	NE	(59)-234-N
Duquesne	27	33	19	NE	(59)-234-N
Durlap land	28	32	8	SE	(1)
Dutchmans Dream	28	33	20	NW	(63)-69
Eagle Mines	27	33	16	SE	(1)
Eagle Mines	27	33	15	SW	(1)
Eagle North Mine	27	33	15	SW	(58)-3
Eagle South Mine	27	33	15	SW	(58)-2
Eaglewood	28	34	25	NE	(63)-210
Eakins Custom Mill	28	32	21	SE	(61)-212
Eakins Tailing Mill	28	32	21	SW	(61)-211
Ealor Mining Co Mine	28	32	17	SE	(58)-14, 15
East 15th Street	27	33	12	SW	(59)-200
East Ground Floor	28	32	7	NW	(61)-11
East Ground Floor	28	32	7	NE	(61)-11
East Hill Top	29	32	31	SW	(64)-52
Eastern Star M Co	28	32	21	NE	(1)
Eden	27	33	9	SE	(59)-69

MINE NAME	T	R	S	OS	Reference
Edgar land	28	32	16	SW	(1)
Edith	27	33	3	SW	(59)-213
Edwina	29	32	9	SE	(64)-27, (58)-2
Egyptian	28	32	34	NE	(61)-198
Eleanor	28	34	36	NW	(63)-237
Electrical M Co	28	32	7	NW	(61)-22, (58)-7
Eleventh Hour M Co	28	32	21	SW	(1)
Eleventh Hour M Co	28	32	21	SE	(1)
Eleventh Hour Mine	28	32	21	SE	(1)
Eleventh Hour Mine	28	32	21	SE	(58)-12, 15, 16, 19
Eleventh Hour Mine	28	32	21	SW	(58)-17-20
Ellen B	28	34	36	NE	(63)-266
Elliot land	28	32	19	SE	(1)
Ellipse M Co	28	32	21	NW	(1)
Emma	28	33	16	SW	(63)-31
Emperor	27	33	19	NW	(59)-209-N
Empire Zinc Co	27	33	16	SE	(58)-1
Empire Zinc Co	27	33	16	SE	(1)
Empire Zinc Co	27	33	15	SW	(1)
Empire Zinc Co	27	33	4	SE	(1) (post89)
Empire Zinc Co	27	33	3	SW	(1) (post89)
Empire Zinc Co	27	33	9	NE	(1) (post89)
Empire Zinc Co	27	33	10	NW	(1) (post89)
Empress #2 Mine	28	32	8	SW	(58)-5
Empress No 2	28	32	8	SW	(61)-143
Engineers	28	32	7	NW	(61)-13
England land	28	32	9	SW	(1)
Equitable	28	34	35	SE	(63)-241
Ethel Gray	28	33	32	SE	(63)-157
Etta May	28	34	35	SE	(63)-240
Eureka	28	34	25	NE	(63)-219
Evans-Hall-Soy	27	32	4	NE	(60)-24
Evansville	27	33	9	SE	(59)-68
Evansville-No 1	29	32	8	NE	(64)-5
Excel	27	33	3	SW	(59)-104
Excelsior	28	33	18	SW	(63)-27
Express	29	32	8	NE	(64)-12, (58)-1
F and B	27	32	2	SW	(60)-12
F R L	27	33	13	SW	(59)-157
Federated	28	33	15	SW	(63)-37
Federated	29	32	15	NW	(64)-34, (58)-3
Federated L&Z Co Mine	29	32	9	NE	(58)-1
Fenix-Martin	29	32	31	SW	(64)-60
Fenix-Martin Mill	29	32	31	SW	(64)-61
Fidelity	28	32	34	NW	(61)-186
Fidelity	28	32	34	SW	(58)-8
Fighting Wolf	28	33	30	SW	(63)-98
First Luck	28	34	11	NE	(63)-191

MINE NAME	T	R	S	OS	Reference
First National	28	32	34	NE	(61)-197
Fleming Diggings	27	31	6	NE	(1)
Florence	28	33			(63)-127
Florence G	28	34	14	SE	(63)-202
Florine	28	32	18	NW	(61)-30, (58)-11
Florine Shaft (Milan M)	28	32	28	NW	(58)-10
Flynn & Co	27	34	12	NE	(59)-232
Fort (now Hartford)	28	32	34	SW	(61)-187
Fort Scott Shaft	27	32	4	NE	(60)-27
Foster	27	33	14	SE	(59)-156
Fountain	28	32	16	NW	(1)
Fountain et al	28	32	16	NW	(1)
Four Corner Diggings	27	33	2	NW	(1)
Four Corners Mine	28	34	25	NW	(63)-206
Francis	27	33	11	SE	(59)-179
Francis T	28	33	17	SE	(63)-22
Franklin	27	33	4	SE	(59)-111
Franklin	27	32	3	NE	(60)-2, (58)-4
Freehold No 1	29	34	22	NW	(62)-18
Freehold No 1	29	34	22	NE	(62)-18
Freehold No 2	29	34	14	SW	(62)-19, (58)-10, 11
Freehold No 3	29	34	23	NW	(62)-20, (58)-6-11
Freehold No 4	29	34	15	SE	(62)-21
Freehold No 4	29	34	15	NE	(62)-21
Freeman	28	34	25	NE	(63)-220
Freeman	28	33	16	SW	(63)-85
Friday	27	33	14	NW	(59)-145
Frisco	28	33	20	NE	(63)-63
Fullerton	28	32	17	SE	(61)-66, (58)-6, 7
G C and M Mine	28	32	7	SE	(61)-31
Gabriel Mine	27	32	4	NE	(58)-1
Gardner	27	32	4	NE	(60)-25
Gardner and Dean	27	33	11	NW	(59)-124
Garrison L & Z Co	28	32	19	NE	(1)
Gas Shaft	28	33	32	SE	(63)-158
Gascho	29	34	14	NW	(62)-12, (58)-7, 8, 9
General	28	34	35	NE	(63)-238
George H	28	32	28	NW	(61)-122
Geronimo	27	33	7	SE	(59)-58
Geronimo	27	33	8	SW	(59)-58
Geronimo	28	33	30	SW	(63)-100
Get There M Co	28	32	21	SE	(1)
Gibson	28	32	28	SW	(61)-132, (58)-2
Gibson	27	33	6	SE	(59)-36, (58)-6, 7
Gibson Girl	28	33	32	SE	(63)-176
Gimlet	27	34	24	SE	(59)-237-N
Gimlet	27	34	24	SE	(58)-4-7, 9-11
Gimlet	27	34	24	SW	(58)-8

MINE NAME	T	R	S	OS	Reference
Gladstone	28	32	21	NW	(61)-72
Gladys Mine	28	32	20	SW	(58)-13
Glendale	27	33	3	SW	(59)-99
Globe M & M Co	28	30	17	part	(1)
Globe M & M Co	28	30	8	part	(1)
Gobar	27	33	4	SE	(59)-110
Gobar	27	33	11	NW	(59)-129
Gobar & Tomlinson Shaft	27	33	11	SW	(1)
Gobbler	28	32	21	SE	(61)-96, (58)-10, 11
Golden Glow	28	32	6	SW	(61)-4, (58)-1
Goldenrod	28	33	33	SW	(63)-141
Goldfield	29	32	8	NW	(64)-58
Gooch	27	32	2	SW	(60)-9
Good Enough	28	33	32	SW	(63)-161
Good Friday	29	32	16	NE	(64)-25, (58)-1
Good Sheperd	29	32	8	NW	(64)-3, (58)-5
Good Wednesday	29	32	15	NW	(64)-35, (58)-1, 2
Good Will	29	32	31	SW	(64)-54, (58)-1-7
Goodrich	28	32	28	NW	(61)-123, (58)-13, 14
Goodwin & Co	27	33	18	NE	(59)-222
Goodyear	29	34	22	NE	(58)-7 thru 14
Google	28	32	29	NE	(61)-150
Gore	29	32	9	SW	(64)-15, (58)-7, 8
Gotham	28	32	28	SW	(61)-129
Gouvernour	28	33	18	SW	(63)-26
Grace	28	33	33	SW	(63)-129
Grace	28	33	33	SW	(63)-139
Grace No 1	28	33	33	SW	(63)-142
Grace No 3	28	33	33	SW	(63)-143
Grace No 3	28	33	33	NW	(63)-143
Granby M&S Co land	28	32	8	SW	(1)
Granby M & Smelting Co	27	33	2	SE	(1)
Granby M & Smelting Co	27	33	11	NE	(1)
Granby M & Smelting Co	28	33	33	SE	(1)
Granby M & Smelting Co	28	33	33	SW	(1)
Granby M & Smelting Co	28	33	34	SE	(1)
Granby M & Smelting Co	28	33	34	SW	(1)
Granby M & Smelting Co	28	33	33	NE	(1)
Grand Central	27	33	9	SW	(59)-63
Grand Haven	28	32	32	NW	(61)-167
Grasselli #2, Shaft #1	28	33	16	SW	(63)-38
Grasselli #2, Shaft #2	28	33	16	SW	(63)-39
Grasselli #2, Shaft #3	28	33	16	SW	(63)-40
Grasselli #2, Shaft #4	28	33	16	SW	(63)-41
Grasselli #2, Shaft #5	28	33	16	SW	(63)-42
Grasselli #2, Shaft #6	28	33	16	SW	(63)-43
Grasselli #2, Shaft #7	28	33	16	SW	(63)-44
Grasshopper	28	32	21	SW	(61)-93, (58)-21-23

MINE NAME	T	R	S	OS	Reference
Gray Goose	28	33	28	NE	(63)-92
Great Northern Mine	28	33	7	SE	(58)-8,9
Great Western Z & L Co	27	32	6	SE	(1)
Great Wonder	28	32	17	SE	(61)-61, (58)-8
Greatest American	28	33	20	SW	(63)-66
Greatest American	28	33	20	NW	(63)-66
Green Castle	27	32	7	SW	(60)-35
Green Snake	27	32	6	SE	(60)-33
Green Valley	27	32	5	SW	(60)-62
Greenhorn	27	32	10	SW	(60)-47
Greenhorn M Co land	28	32	8	SE	(1)
Gregg Shaft	27	33	18	SE	(1)
Gretchen Lead & Zinc Co	28	33	31	NW	(1)
Gretchen Lead & Zinc Co	28	33	31	SW	(1)
Greyhound	27	33	9	NE	(59)-91
Gross	27	33	11	SW	(59)-137
Ground and Irwin	28	32	33	NE	(61)-174
Ground Floor	28	32	7	NW	(61)-9, (58)-10,11
Groundhog	27	33	14	NW	(59)-140
Grove Creek Diggings	27	32	12	NW	(1)
Grundler	28	34	35	SE	(63)-243
Guengerich & Gregg Shaft	28	33	31	NW	(1)
Guinn & Lloyd Mines	27	33	14	NE	(1)
Guinn & Lloyd Mines	27	33	14	SE	(1)
Guinn & Lloyd Mines	27	33	13	NW	(1)
Guinn & Lloyd Mines	27	33	13	SW	(1)
Guinn, John C (640 ac)	28	32	7	SW	(1)
Guinn, John C (640 ac)	28	32	7	SE	(1)
Guinn, John C (640 ac)	28	32	8	SW	(1)
Gulch	28	33	18	NW	(63)-18
Gulch	28	33	18	NE	(63)-18
Gussie K	28	32	33	SW	(61)-178, (58)-7
H and F	28	32	29	SW	(61)-138
H C and M	27	32	10	NW	(60)-65
Hagerton & Warren	27	33	26	NE	(59)-226-N
Hamburg	27	33	14	NE	(59)-170
Hamilton Shaft	27	33	1	SW	(1)
Hancock	27	33	9	SE	(59)-74
Hansel	28	33	12	SE	(63)-12
Happy Jack	29	32	9	SE	(64)-20, (58)-3
Happy Rock Mine	27	34	2	NE	(58)-1
Harrington Shaft	27	33	3	NW	(1)
Harrison	27	33	5	NE	(59)-22
Hartford	27	34	2	SE	(59)-230
Hartford (Old Fort)	28	32	34	SW	(61)-187
Hasler & Thomas land	28	32	8	SW	(1)
Hawk and Company	27	33	13	NW	(59)-166
Hayes Shaft	28	33	34	SW	(1)

MINE NAME	T	R	S	QS	Reference
Hayseed	29	32	25	NE	(64)-44
Hegoda	27	33	11	SE	(59)-184
Henckel Mine	27	32	24	SW	(58)-1
Henderson L & Z Co	28	33	19	NW	(63)-78
Henry Tucker Shaft	28	33	34	NW	(1)
Herbert S Mine	28	33	12	NE	(58)-2,3
Hercules	28	32	34	SW	(61)-189
Herold M Co	28	32	29	NE	(1)
Herring	27	33	11	SE	(59)-189
Hickory	28	34	25	NE	(63)-213
Hickory, Old	28	33	32	SE	(63)-164
High Five	29	34	15	SW	(62)-16
High Five	29	34	15	SE	(62)-16, (58)-2-8
High Five	29	34	15	SE	(62)-17
High Grade	27	33	14	NW	(59)-220
High Grade M Co	27	33	5	NW	(59)-224
High Tariff	28	33	16	SW	(63)-84
Hoboken	27	33	9	NE	(59)-82
Hoge	28	32	17	SE	(61)-108
Holden	28	34	13	SE	(63)-262
Holy Smoke Mine	28	32	21	SW	(58)-24
Home Mining Co	27	33	15	NE	(1)
Homestake	28	34	12	NE	(63)-261
Homestead	28	32	20	NE	(61)-70
Homestead	28	32	17	SE	(61)-70
Homestead M Co	28	32	17	SE	(1)
Homestead M Co	28	32	20	NE	(1)
Hoo-Hoo	29	32	9	SW	(64)-13
Hood Shaft	27	32	7	SW	(1)
Hopi Mining Co	28	33	16	SE	(63)-182
Hornedy	27	33	12	SW	(59)-178
Horseshoe	27	33	4	NE	(59)-8
Horseshoe	28	34	25	NW	(63)-207
Hot Air	28	32	29	NE	(61)-146
Hough land	28	32	19	SW	(1)
Hough land	28	32	19	NW	(1)
Houston	28	34	25	NE	(63)-222
Howard	27	33	11	NE	(59)-197
Huckleberry	28	33	31	NW	(63)-105
Huddleston	28	33	28	NE	(63)-95
Hughes Sludge Mill	28	32	7	SE	(61)-215
Hummel Bros land	28	32	9	SE	(1)
Hunch Bugger	28	34	25	NE	(63)-216
Hurry Up	28	32	7	NW	(61)-12, (58)-9
Hutchinson Mine	27	33	20	SE	(58)-1,2
Hyde Park	28	32	34	SE	(61)-192, (58)-4
I Know	27	33	4	NE	(59)-9
Ice Plant	28	32	7	SE	(61)-25

MINE NAME	T	R	S	OS	Reference
Illinois & Missouri Co	28	33	30	SW	(1)
Illinois Zinc Co	28	33	8	SE	(63)-181
Imperial	28	32	7	SW	(61)-24
Imperial, Old(C and S)	28	34	35	SW	(63)-245
Imperial, Old(C and S)	28	34	35	NW	(63)-245
Incline	28	32	17	NW	(61)-45, (58)-72, 73
Indiana Mine	29	33	18	SE	(62)-7, (58)-1 thru 5
Iowa Mining Co	28	33	8	NW	(63)-180
Isabella M Co	29	32	10	SW	(64)-33
Isabella Mine	29	32	10	SW	(58)-1
Isherwood Mine	28	34	12	NW	(58)-1, 2, 3, 4
Island	27	33	11	NE	(59)-195
Isley	28	34	36	NW	(63)-233
J A T	28	33	21	SE	(63)-56
J B S Mine	27	32	16	NE	(60)-69
J M Slaught	28	32	17	SW	(61)-59, (58)-24, 25
Jack Daw	28	33	33	SW	(63)-140
Jack Harvard	27	33	4	SE	(59)-94
Jack Johnson	28	33	32	SE	(63)-160
Jack Johnson	28	33	32	SW	(63)-160
Jack Rose	27	33	5	NE	(59)-24
Jackpot	27	32	18	NW	(60)-39
Jacobs Brothers	27	32	7	NE	(1)
James	28	34	35	NW	(63)-244
Jasper Cnty Land & M Co	28	32	28	NW	(58)-12
Jasper Diggings	27	33	11	NE	(1)
Jasper Mining Co	28	33	34	NW	(1)
Jersey P	29	32	16	NE	(64)-24
Jersey P Mine	29	32	16	NE	(58)-2
Jewell	28	33	33	NW	(63)-123
John Jackson	28	33	32	SE	(63)-163
John L Mine	28	33	12	NE	(58)-1
Johnson	28	34	36	NE	(63)-256
Johnson Diggings	27	32	20	SE	(60)-59-N
Johnson Mine	27	33	26	NE	(59)-225-N
Joplin Mines Co	27	32	18	SW	(60)-40
Joplin-Kentucky	28	33	32	NW	(63)-116
Juanita	27	32	10	NW	(60)-50
Juggernaut	28	34	36	NE	(63)-253
K C B Mining Co	29	33	18	SE	(62)-5
Kandy Kid	27	32	10	SW	(60)-44
Kans Expl Inc Isherwood	28	34	12	NW	(63)-190
Kans Expl Inc Martin	28	34	11	NE	(63)-188
Kans Expl Inc Martin	28	34	2	SE	(63)-188
Kans Expl Inc Martin	28	34	2	SW	(63)-188
Kansas Exploration Co	29	33	23	SE	(62)-9
Katherine	28	33	16	SW	(63)-32
Kathleen	28	34	25	SW	(63)-223

MINE NAME	T	R	S	OS	Reference
Katy	28	33	16	SW	(63)-86
Katy Lou	27	33	4	NW	(59)-13
Katydid	28	33	32	NW	(63)-155
Kelley land	28	32	7	SW	(1)
Kelley land	28	32	18	NW	(1)
Kelley land	28	32	19	NW	(1)
Kellor M Co	28	32	29	SW	(1)
Kellor M Co	28	32	29	SE	(1)
Kelsey Norman Mine	28	33	19	NE	(58)-1
Kentucky L and Z Co	28	33	32	SE	(63)-165
Kenyon	27	33	11	NW	(59)-132
Kenyon	27	33	11	SW	(59)-132
Keystone	28	34	25	NW	(63)-212
Kid Hollow	28	33	31	NE	(63)-110
King Edward	28	32	8	SW	(61)-36
King Jack	28	33	32	SE	(63)-174
King Solomon M Co	27	33	17	SW	(1)
King William	27	32	3	SW	(60)-17
King William	27	32	4	SE	(60)-17
Kingfisher	28	33	32	NE	(63)-154
Kirkwood	28	32	20	NE	(61)-81
Knickerbocker	27	32	3	NE	(60)-5
Knoble Mining Co	28	34	25	NW	(1)
Knox and Co	27	33	11	NE	(59)-191
Kohinoor	27	33	4	SE	(59)-96
Kohinoor Mines	27	33	4	SE	(1)
Kramer	27	34	2	NE	(59)-229, (58)-2, 3
Kramer #1 Mine	27	34	2	NE	(58)-4
Kramer #2 Mine	27	34	2	NE	(58)-5
Kramer Incline Mine	27	34	2	NE	(58)-6
Kramer Mine	29	33	19	SE	(62)-8
Kronprinz	28	33	32	SE	(63)-159
L C Mine	28	33	31	NE	(63)-111
La Tosca	29	32	31	SW	(64)-55, (58)-8-14
Lackawanna	28	33	32	NE	(63)-149
Lackawanna	28	33	33	NW	(63)-149
Lambert Custom Mill	27	32	16	NW	(60)-77
Larkins	27	33	11	NE	(59)-193
Last Chance	27	33	14	SW	(59)-149
Latoka	28	32	29	SW	(61)-137
Latoka	28	32	29	SE	(61)-137
Laura	28	32	21	SE	(61)-100
Lawrence and Joplin	27	33	4	SE	(59)-122
Lead Hill	28	34	25	NE	(63)-264
Leadville Hollow	28	33	33	SW	(1)
Leadville Hollow	28	33	33	NW	(1)
Leepers	27	33	24	NW	(59)-161
Lehigh Mine	28	33	7	SW	(58)-14 thru 21

MINE NAME	T	R	S	OS	Reference
Leidy and Henson	28	32	8	SW	(61)-34
Lela	29	32	9	SE	(64)-29
Leonard and Co	27	33	14	NW	(59)-144
Lewis & Co	29	32	9	SE	(64)-18, (58)-5
Liberty Bell	27	33	7	NE	(59)-48
Lichliter	27	33	9	SW	(59)-67
Lichliter	28	34	25	SW	(63)-224
Lima	28	32	29	NW	(61)-144, (58)-6
Lindemann	27	33	9	NE	(59)-88
Linzee Mines	28	31	8	part	(1)
Little Bess	28	33	7	NW	(63)-13
Little Bob	27	32	3	SE	(60)-7
Little Coon	27	33	13	NW	(59)-169
Little D	28	32	31	SW	(61)-161
Little Diamond	28	32	17	SW	(61)-52, (58)-46-50
Little Em	29	32	8	NW	(64)-1
Little Francis	29	32	6	SW	(64)-50
Little Hope	27	32	7	SW	(60)-36
Little Mary	29	32	6	SW	(64)-47
Little Mary	29	33	1	NE	(62)-1
Little Nuggett Mill	28	33	34	NW	(63)-186
Little Scott	28	33	32	SE	(63)-170
Live Oak	27	33	8	NE	(59)-51
Lizard	28	33	33	NW	(63)-124
Lloyd	27	33	13	NW	(59)-167
Lock	28	34	23	NE	(63)-195
Log Cabin	27	32	2	SW	(60)-1
Lola	28	33	33	SE	(63)-177, (58)-1
Lone Elm Diggings	27	33	3	NW	(1)
Lone Elm Diggings	28	33	34	SW	(1)
Lone Peach	27	32	6	SE	(60)-63
Lone Star Mine	29	32	8	NE	(58)-2
Long Green Mine	27	32	6	NW	(60)-64
Longacre-Chapman	29	32	8	NE	(64)-9
Loraine	27	32	4	SE	(60)-31
Louisa T	28	34	36	SW	(63)-249
Lounetta	27	33	4	NW	(59)-17
Lucky Abe	28	32	33	SW	(61)-180
Lucky Budge	28	32	21	SW	(61)-117, (58)-25
Lucky Five	27	32	4	NE	(60)-28
Lucky Five	27	32	4	SE	(60)-28
Lucky Five	28	34	36	NW	(63)-234
Lucky George	28	33			(63)-103
Lucky Joe	28	33	18	SW	(63)-28
Lucky Mack	28	33	20	NW	(63)-71
Lucky May	27	33	9	SW	(59)-62
Lucky Mine	29	33	18	SE	(62)-6
Lucky Tiger	29	32	8	NW	(64)-6, (58)-3, 4

MINE NAME	T	R	S	OS	Reference
Lucky Tiger	29	32	8	NE	(64)-6
Lucky Tom	28	32	29	NE	(61)-148
Lucy (Sultana #2)	27	33	3	SW	(59)-107
Lucy Bell	28	32	20	NW	(58)-14,15
Lucy Bell	28	32	20	NW	(61)-89
Luscombe	28	32	17	SE	(61)-64, (58)-2,3
Lynch	28	34	25	SW	(63)-231
M&S (now Cygni M Co)	28	32	28	NW	(61)-121
M & H Custom Mill	28	34	12	NE	(63)-265
M and B	27	32	4	SE	(60)-23, (58)-2
M and B	27	32	3	SW	(60)-23
M M Co	27	32	2	SW	(60)-10
Madgeburg	27	33	14	NE	(59)-152
Mahaska Mining Co	27	33	15	SW	(1)
Mahaska Mining Co	27	33	15	SE	(1)
Mahatma	28	32	29	SW	(61)-136
Mahatma	28	32	29	SE	(61)-136
Mammoth	28	32	29	NW	(61)-153
Mandarian	27	33	5	NE	(59)-30
Mandarin	27	33	8	SE	(59)-55
Manhattan Lease	28	33	28	SE	(1)
Manhattan Mine	28	32	20	SE	(58)-5
Manhattan Mine	28	32	20	SW	(58)-5
Manhattan Mine	28	32	20	SE	(58)-3,4
Manhattan Mine	28	32	20	SW	(58)-3,4
Manning Custom Mill	27	32	16	NW	(60)-76
Marguerite	28	33	28	NE	(63)-93
Marion #1 and #2	27	33	4	SE	(59)-95
Marjorie Stewart	28	32	34	NE	(61)-196, (58)-1
Markapaux	27	33	11	SE	(59)-180
Marquis	28	32	29	SE	(61)-135
Martha Bell	27	33	5	NW	(59)-31
Martin #2 Mine	28	34	11	NE	(58)-2
Mary Ann	27	33	14	SW	(59)-150
Mary B	27	33	3	SW	(59)-120
Mary B	28	33	19	NE	(63)-74
Mary C	28	33	16	NW	(63)-29
Mary C	28	32	29	NE	(61)-155, (58)-1
Mary Ellen	27	33	16	NE	(59)-75
Mary Jane	27	32	10	SW	(60)-66
Mary Jane	27	32	10	NW	(60)-66
Mary Jones	28	33	17	SE	(63)-21
Mary Lincoln	27	33	9	SE	(59)-73
Mary O'Reilley	28	33			(63)-106
Mary S	28	33	32	SE	(63)-171
Massasoit	27	33	14	NW	(59)-139
Mattes	28	33	18	SE	(63)-73
Mattes Bros	27	33	19	NW	(59)-210-N

MINE NAME	T	R	S	OS	Reference
Mattes Bros	27	34	24	NE	(59)-235-N, (58)-1
Mattes Bros	28	32	20	NW	(61)-56
Mattoax	28	33	25	SW	(63)-88
Maude L	28	33	32	NE	(63)-148
Maybelle	27	33	5	NE	(59)-23
McBride	28	33	33	NW	(63)-125, (58)-7, 8
McClelland, T A land	28	32	29	SE	(1)
McCorkle Mines	28	32	18	SE	(1)
McDonald	28	32	21	SW	(61)-114
McDonald	28	32	28	NW	(61)-126
McGavran	27	33	14	SE	(59)-155
McGregor Mine	28	32	21	SW	(58)-28
McKinley	28	32	28	SW	(61)-134
McKinley M Co	28	32	28	NW	(1)
Meadow Lark	27	32	15	NE	(60)-43
Meadville	28	32	34	NW	(61)-182
Meadville	28	32	8	SW	(61)-32
Media	28	32	7	NE	(61)-23, (58)-3, 4
Melrose	28	32	33	NW	(61)-171, (58)-8, 9
Mercantile	28	32	7	SE	(61)-28
Mercantile	28	32	7	SW	(61)-28
Mercantile #4 Mine	28	32	7	SW	(58)-5, 6
Mercantile Group	28	32	33	SE	(61)-177
Miami	28	33	33	SW	(63)-138
Miami	28	32	34	NE	(61)-200
Middle West	27	33	16	NW	(59)-66
Middle West	27	33	16	NE	(59)-66
Midnight Mine	28	34	25	SW	(58)-1
Mikado	27	33	8	NE	(59)-52
Milan	28	32	28	NW	(61)-125
Milan M (Florine Shaft)	28	32	28	NW	(58)-10
Milan Mine	28	32	28	NW	(58)-11
Mildred	27	33	4	SE	(59)-108
Millard	28	32	34	NE	(61)-199
Miller land	28	32	30	NW	(1)
Millie Doe	28	33	33	SW	(63)-130
Milton	28	33	32	SE	(63)-152
Mineral King	28	32	7	NW	(61)-17, (58)-8
Mineral Recovery Mill	28	32	8	SW	(61)-209
Minneapolis M Co	28	32	21	SW	(1)
Minnie Lou	28	33	7	NW	(63)-14
Minnie May	28	32	21	SW	(61)-74, (58)-27
Minnie May	28	32	21	NW	(61)-74
Minor Heir	28	32	6	SW	(61)-19
Missouri	28	33	20	NE	(63)-62
Missouri Mule	28	32	7	NW	(61)-14
Missouri, Old	28	33	31	SE	(63)-114
Mo H	27	33	7	NE	(59)-47

MINE NAME	T	R	S	OS	Reference
Moark-Nemo	28	32	18	NE	(61)-26, (58)-1, 2
Mohawk	28	33	21	NE	(63)-50
Monitor	27	33	4	NE	(59)-1
Monkey Hill Mine	27	33	19	NE	(58)-2, 3
Montclair Mine	29	32	16	NE	(58)-3
Monte B	28	32	8	SW	(61)-37
Montgomery L & Z Co	28	33	28	SE	(1)
Montgomery L & Z Co	28	33	27	SW	(1)
Monticello Shaft	28	32	21	SW	(61)-118
Moon Diggings	27	33	2	NW	(1)
Morley M Co	28	32	17	SE	(1)
Morning Hour	27	33	16	NW	(59)-65
Morning Star	28	34	25	SW	(63)-227
Morrison Mine	28	32	29	NE	(58)-5
Morse Shaft	27	33	3	NW	(1)
Moss	29	32	9	SE	(64)-30
Mound City M Co	28	32	21	SW	(1)
Mound City M Co	28	32	28	NW	(1)
Mound City M Co	28	32	29	NE	(1)
Movakan	28	32	31	SE	(61)-165
Mt Ararat	28	32	29	NE	(61)-149, (58)-1
Mt Clair	29	32	16	NE	(64)-22
Mt Clair	29	32	9	SE	(64)-22
Muddauber	28	34	25	SW	(63)-225
Munson	28	32	21	NW	(61)-76
Muskogee	27	32	11	NW	(60)-67
Must go	28	32	28	NW	(61)-207
Must go	28	32	29	NE	(61)-207
Mutt and Jeff	27	33	26	NE	(59)-202-N
Myrick	27	33	9	SW	(59)-61
Mystic	27	33	20	SW	(59)-206-N, (58)-3
N Cartersville L&Z Co	28	32	17	NW	(1)
N E Perry Mines	28	32	21	NW	(1)
Nancy B	28	34	25	SW	(63)-226
Napoleon (Old Big Joe)	28	33	22	NW	(63)-47
Nashville	28	33	30	SW	(63)-101
National No 2	28	32	18	SE	(61)-109, (58)-8, 9
Nevada M Co	28	32	17	NW	(1)
New Coon	27	33	14	NE	(59)-153
New Dividend	27	32	6	NE	(60)-32
New Dividend	28	32	31	SE	(61)-164
New Emmet Mine	27	33	12	SW	(58)-1
New England	28	34	14	SE	(63)-201
New Geronimo	28	33	30	SW	(63)-99
New Hope	28	32	33	SE	(61)-206
New Hope Mine	28	32	33	SE	(58)-1
New Moon	28	33	19	NE	(63)-76
New York Mining Co	28	33	34	SE	(1)

<u>MINE NAME</u>	<u>T</u>	<u>R</u>	<u>S</u>	<u>OS</u>	<u>Reference</u>
Newboy	27	32	3	SW	(60)-19
Nicholasville	28	33	32	SE	(63)-167, (58)-2
Nina F	28	33	17	SE	(63)-23
Nine O'Clock	28	32	28	SW	(61)-131, (58)-6,7
No Name	29	32	10	SW	(64)-36
No 104	27	33	13	NW	(59)-174
No 117	27	33	11	SE	(59)-182
No 168	27	33	11	SE	(59)-181
No 2	27	33	11	NE	(59)-198
No 29	27	33	11	SE	(59)-176
No 45	27	33	11	SE	(59)-187
No 5	27	33	11	NW	(59)-131
Noble land	28	32	19	NE	(1)
Noble Mining Co	28	32	19	NE	(1)
Noonday	28	32	21	SE	(61)-94, (58)-6-9
North Joplin Mining Co	28	33	34	SE	(1)
Northern Indiana M&D Co	28	33	25	SW	(63)-185
Nos 91 and 92	27	33	11	SE	(59)-183
Nowata	28	32	28	SW	(61)-133, (58)-3
Nowata No 3	27	33	8	SE	(59)-57
Nowata No 3	27	33	8	SW	(59)-57
Nutmeg	28	32	21	SE	(61)-95
O'Keefe Mine	27	33	14	NW	(1)
O F & L	27	32	3	NE	(60)-3, (58)-3
O K Mining Co	29	32	15	NW	(64)-38
O S and Y	27	33	16	NW	(59)-60
Oak Hill	28	33	20	NW	(63)-70
Oakwood	28	33	12	NE	(63)-9
Octo	27	33	14	SW	(59)-148
Olympia	27	33	14	NW	(59)-142
Olympic	28	33	32	SE	(63)-151
Omaha L Y Z Co	28	33	19	NW	(63)-77
Omega	28	33	33	SW	(63)-133, (58)-4
Onamena	27	32	10	NW	(60)-48
Onamena	27	32	3	SW	(60)-48
Once More	27	33	6	SE	(59)-37, (58)-8,9
One Spot	27	32	11	NW	(60)-54
Opal Wonder	28	32	21	SW	(61)-82, (58)-29,30
Open Air	27	32	10	NE	(60)-53
Orange Mine	28	32	17	NW	(61)-47
Orange Mine	28	32	17	NW	(58)-66
Orchard City	28	32	21	SE	(61)-106
Oronogo Circle Mine	29	33	36	SE	(62)-11, (58)-1
Oronogo Mutual	29	33	36	SE	(62)-10
Oronogo Mutual	29	32	31	SW	(64)-53
Oronogo Mutual	28	32	6	NW	(61)-1
Oronogo Mutual	29	32	31	SW	(61)-1
Oronogo Mutual No 5	28	32	6	NW	(61)-214

MINE NAME	T	R	S	QS	Reference
Orphan Boy	28	32	21	SE	(61)-98
Osage	28	32	17	SE	(61)-63
Osceola No 3	27	33	8	NW	(59)-42
Oswego Mining Co	27	33	11	SE	(1)
Oswego Mining Co	27	33	11	SW	(1)
Oswego Mining Co	27	33	11	NE	(1)
Oswego Mining Co	27	33	11	NW	(1)
Oswego Mining Co	27	33	12	NW	(1)
Oswego Mining Co	27	33	12	SW	(1)
Oswego Mining Co	27	33	12	SE	(1)
Overland Mine	27	32	3	NE	(58)-1
Owasso	28	32	33	SE	(61)-176, (58)-2
Oxford	28	32	8	SW	(61)-75
Oxford	28	32	20	NW	(61)-91
Paoma	27	33	9	NE	(59)-80
Paragon	27	33	5	SW	(59)-40
Park	27	33	9	SE	(59)-70
Parker Mine	28	32	6	SW	(61)-2, (58)-16
Parker Mine	28	32	6	SW	(58)-17 to 21
Parker Mine	28	32	6	NW	(58)-22
Parr Hill	27	33	11	SE	(59)-173
Pawnee	28	32	17	SW	(61)-54, (58)-23
Paxton, Raybn&Crln	27	33	11	SW	(59)-133
Paymaster	28	34	25	SE	(63)-260
Pearson (Katherine D)	27	33	8	SE	(59)-56
Peck and Company	27	33	13	SW	(59)-160
Peggy	27	33	11	SE	(59)-185
Pelican	28	33	32	SE	(63)-172
Pencil Frank	27	32	3	SW	(60)-21
Pencil Frank	27	32	3	SE	(60)-21
Perkins	28	34	25	NE	(63)-218
Perry mine	27	30	12	NE	(1)
Pfotenhauer	28	33	20	NW	(63)-68
Phenix, Old	28	32	21	SE	(61)-104
Phoenix - Vernon	28	32	21	SE	(61)-105
Phoenix Shaft (Boston Get)	28	32	21	SE	(58)-3
Picher Bros	27	33	11	SE	(1)
Picher Bros	27	33	11	SW	(1)
Picher Bros	27	33	11	NE	(1)
Picher Bros	27	33	11	NW	(1)
Picher Bros	27	33	12	NW	(1)
Picher Bros	27	33	12	SW	(1)
Picher Bros	27	33	12	SE	(1)
Picher Lead Co	27	33	3	NW	(1)
Pittsburg	28	33	33	NW	(63)-145
Playter Custom Mill	29	34	22	NE	(62)-26
Plymouth Rock	27	32	6	NW	(60)-34
Plymouth Rock	27	32	12	SE	(60)-74

<u>MINE NAME</u>	<u>T</u>	<u>R</u>	<u>S</u>	<u>OS</u>	<u>Reference</u>
Plymouth Rock	27	32	12	SW	(60)-74
Pocatella	28	33	21	SE	(63)-55
Pocohontas	28	33	16	SE	(63)-35, (58)-1
Porter mines	28	31	4	NW	(1)
Porter Mines	27	33	2	SW	(1)
Portland	27	33	4	NW	(59)-16, (58)-4
Porto Rico (Roland)	28	32	34	NE	(61)-202
Postal	27	33	4	NW	(59)-14
Poundstone land	28	32	8	SE	(1)
Poverty Flat	27	33	11	SE	(59)-186
Powhattan	28	33	16	SE	(63)-34
Prairie Chicken	27	33	3	SW	(59)-102
Prairie Chicken	27	33	3	SW	(59)-106
Prairie State	27	33	9	NE	(59)-86
Praline Mine	28	33	33	NW	(58)-6
Preble	27	33	5	NE	(59)-26
Premier Mine	28	32	7	SE	(58)-1, 2
Primrose	27	32	9	NE	(60)-73
Priscilla	27	33	7	SE	(59)-59
Providence	28	32	34	NE	(61)-201
Providence	28	32	7	NW	(61)-15, (58)-13
Pump Shaft	27	33	14	NE	(59)-171
Puritan	27	33	19	NW	(59)-208-N
Puritan	27	33	19	SE	(58)-4
Puritan	27	33	19	NE	(58)-5
Pyramid	29	34	14	SE	(62)-24, (58)-1
Pyramid	29	34	23	NE	(58)-1, 2
Quaker Maid	27	33	5	NE	(59)-25
Queen Esther	28	32	21	NW	(61)-80
Quick Seven	29	32	6	SW	(64)-51
R and C Mine	29	32	15	NW	(64)-37
R and L	28	34	36	NE	(63)-254
Rabbit Foot	27	33	7	NW	(59)-50
Rabbits Foot	27	33	11	SW	(59)-136
Ragged Seven	28	34	24	SW	(63)-205
Rain in the Face	28	33	21	NW	(63)-179
Rainbow	27	33	4	NW	(59)-20
Ramage	28	32	17	NW	(61)-49, (58)-68, 69
Ramage	27	33	5	SW	(59)-39, (58)-2, 3
Randall & Co	27	33	11	NW	(59)-126
Raymond A	28	33	22	SW	(63)-46
Rebecca	27	33	5	NW	(59)-33, (58)-4
Red Bird	28	32	21	NE	(61)-78, (58)-1
Red Brush	29	32	8	NE	(64)-8
Red Dog	28	32	7	NW	(61)-8, (58)-12
Red Dog	28	32	7	SW	(58)-6
Red Dog	28	32	6	SW	(61)-18
Red Eagle	28	32	17	NW	(61)-46, (58)-70, 71

MINE NAME	T	R	S	OS	Reference
Red Lion	28	34	25	NE	(63)-211
Red Lion	28	34	25	NW	(63)-211
Reding	27	33	35	NE	(59)-204-N
Regent	27	33	3	SW	(59)-116
Regina	28	32	8	SW	(61)-35
Rein Miller Shaft	27	32	20	SW	(60)-75-N
Reliance	28	32	33	SW	(61)-181
Rex M & Smelting Co	27	32	18	NE	(1)
Rex M & Smelting Co	27	32	18	NW	(1)
Rex M & Smelting Co	27	32	18	SE	(1)
Rex M & Smelting Co	27	32	18	SW	(1)
Rex M & Smelting Co	27	32	7	SW	(1)
Rex M & Smelting Co	27	32	7	SE	(1)
Rex M & Smelting Co	27	32	8	SW	(1)
Rich-In-Ore	28	33	16	SW	(63)-87
Richland	28	32	21	NW	(61)-71, (58)-31, 34
Richland M Co	28	32	21	NW	(1)
Richland Mine	28	32	21	NW	(1)
Richmond	28	32	21	SW	(61)-83
Richvale	28	32	6	NW	(61)-20, (58)-23, 24
Richvale	28	32	6	SW	(58)-23
Rickey diggings	28	30	17	part	(1)
Rising Sun M Co	28	32	20	SE	(1)
Riverside	27	33	29	SW	(59)-205-N, (58)-1, 2
Roarke Diggings	27	32	30	SE	(58)-1, 2, 3, 4
Robinson Wells	27	33	24	NW	(59)-201-N
Rochester	28	32	20	SE	(61)-84
Rochester Imperial	27	33	9	NE	(59)-83
Rockford	29	33	17	SW	(62)-4
Roland (Porto Rico)	28	32	34	NE	(61)-202
Rose Bud	28	33	1	NE	(63)-2
Rosy Jane	28	33	21	SE	(63)-54
Rowena	27	34	2	SW	(59)-231
Royal Blue	27	33	4	NE	(59)-5
Royle	27	32	4	SE	(60)-30
Rubberneck	29	32	8	NW	(64)-2
Rueben	28	34	36	SW	(63)-247
Ruth	27	33	9	SE	(59)-71
S and B	27	33	4	NW	(59)-19
S Carterville M Co	28	32	17	SW	(1)
S Carterville M & S Co	28	32	17	SW	(58)-21, 22
Sagawah	27	33	16	NE	(59)-77
Saginaw Diggings	27	32	30	SE	(60)-60-N
Sam Hill	27	33	14	SE	(59)-151
Sam Hill	27	33	14	SW	(59)-151
Sam Moore	28	33	33	NW	(63)-122
Samolia	29	32	8	NW	(64)-57
San Gabriel	27	32	3	NW	(60)-13

MINE NAME	T	R	S	QS	Reference
San Gabriel	27	32	3	NW	(61)-190
Sangamo M Co	28	32	29	NE	(1)
Sarabell	28	33	28	SE	(63)-91
Saum	28	33	20	NE	(63)-64
Sawyer	28	32	20	SW	(61)-145
Sayers	27	32	3	SE	(60)-8
Sayers	27	33	4	NE	(59)-12
Schoenhoerr & Walton	28	32	8	SW	(61)-33
School House	28	32	17	NE	(61)-40, (58)-1
Schott Diggings	27	33	11	NE	(1)
Schott Diggings	27	33	11	SE	(1)
Sciota Tailing Mill	28	32	20	NW	(61)-210
Scotia Mining Co	27	33	18	SE	(1)
Scotland Diggings	27	32	12	NW	(60)-57
Scott	27	32	4	NE	(60)-26
Scranton	27	33	3	SW	(59)-103
Scranton	28	34	25	NE	(63)-221
Second National	29	32	9	SE	(64)-21
Seneca	28	32	29	NE	(61)-152
September	28	32	35	NE	(61)-205
Seven Angels	28	34	23	NE	(63)-199
Seven Devils	28	34	23	NW	(63)-198
Shaft and Derrick	28	32	20	SW	(61)-87
Shaft No 4	28	32	34	NW	(61)-184
Shamrock	27	33	14	NW	(59)-141
Sharpe Lease	27	32	18	NE	(1)
Sheldon	27	33	4	SE	(59)-89
Sheldon	27	33	9	NE	(59)-89
Sheldon-Midnight	28	34	25	SW	(63)-230
Shoestring	28	32	32	NE	(61)-169
Show Me State	28	32	7	SW	(61)-27
Show Me State	28	32	7	SE	(61)-27
Show Me State	28	32	18	NW	(61)-27
Show Me State	28	32	18	NE	(61)-27
Shylock	28	34	36	NE	(63)-252
Sigler	28	34	25	SE	(63)-257
Silver Creek	27	33	26	NE	(59)-203-N
Silver Dick	28	33	17	SW	(63)-25
Sitting Bull	28	33	21	NE	(63)-49, (58)-1, 2
Sixty	27	33	11	NW	(59)-130
Slaton Shaft	28	33	34	SW	(1)
Smith	28	34	25	NW	(63)-263
Snapp-Gunning Mine	29	33	23	SE	(58)-1, 2
Sneed-Proctor	27	32	11	SW	(60)-68
Snyder Brothers	27	33	16	SE	(1)
Sparkler	27	33	5	NW	(59)-27
St Anthony	28	32	29	SE	(61)-147, (58)-3
St Joe	28	33	32	NW	(63)-113

MINE NAME	T	R	S	OS	Reference
St Louis M & M Corp #8	28	33	21	NE	(63)-52
St Louis M&M Corp Mill	28	33	16	SW	(63)-183
St Louis S & R Co	29	34	15	NE	(62)-15, (58)-1
St Patrick	27	33	9	NE	(59)-119
St Regis	27	32	3	SW	(60)-16, (58)-6
St Regis	28	33	32	SW	(63)-162
Standard	28	32	21	SE	(61)-107
Standard L & Z Co	28	34	25	NE	(1)
Standard No 1	28	34	25	NE	(63)-215
Standard No 2	28	34	25	NE	(63)-214
Star	28	32	20	SW	(61)-86, (58)-11, 12
Star	28	33	12	NE	(63)-5
Star	28	34	25	NE	(63)-209
Stephenson	27	32	10	NW	(60)-49
Sterling L & Z Co	28	33	28	SE	(1)
Steve-Son land	28	32	9	SW	(1)
Stevens Mine	28	33	31	NW	(1)
Stevison and Moore	28	32	33	SW	(61)-179
Stout land	28	32	9	SW	(1)
Stout land	28	32	16	NW	(1)
Stout land	28	32	16	NE	(1)
Street	27	33	4	SE	(59)-97
Stump	28	34	36	NE	(63)-255
Sucker Flat Diggings	28	32	19	NE	(61)-111, (58)-1
Sunflower	28	32	8	SW	(61)-38, (58)-3, 4
Sunrise	27	32	10	SE	(60)-46
Sunset	28	32	17	SW	(61)-53, (58)-39-45
Superior	28	33	32	NE	(63)-120
Superior Lead & Zinc Co	27	32	7	NE	(1)
Sutton Shaft	27	33	3	NW	(1)
Swan	28	34	36	NW	(63)-246
Sweetheart	28	33	21	NW	(63)-83
Swindle Hill Diggings	27	33	11	NW	(1)
Swindle Mine	27	33	2	SW	(58)-1
Sycamore	27	32	18	SW	(60)-37
Symmes	27	33	8	NE	(59)-53
T S and J Mine	29	32	6	SW	(64)-48
Talisman	28	32	17	NW	(61)-48, (58)-67
Taneycomo (Old Colony)	28	32	34	NE	(61)-204
Tecumseh	28	33	22	NW	(63)-48
Teddy R	29	32	9	SE	(64)-26
Temagami	27	33	9	NE	(59)-84
Ten O'Clock	28	32	28	SW	(61)-130, (58)-4, 5
Texamo	29	32	6	SW	(64)-56
Texas	28	33	17	NW	(63)-20
Texas Bull Mine	28	33	17	NW	(58)-2, 3
Texas Steer	29	32	9	SW	(64)-16
Texas Steer	29	32	9	SE	(58)-6

<u>MINE NAME</u>	<u>T</u>	<u>R</u>	<u>S</u>	<u>OS</u>	<u>Reference</u>
Thanksgiving	28	32	34	NW	(61)-183, (58)-9, 10
Thayer and Graham	28	34	14	SW	(63)-192
The Doctor M Co	28	32	31	NW	(61)-157
Thomas Connor (600 ac)	28	32	20	SW	(1)
Thomas Connor (600 ac)	28	32	20	SE	(1)
Thomas Connor (600 ac)	28	32	21	SW	(1)
Thomas Diggings	27	33	12	SW	(1)
Thompson & Co	28	32	29	NW	(1)
Thornton	27	33	13	NW	(59)-168
Thoroughbred	28	33	31	NW	(63)-108
Thousand-Acre Tract	27	32	18	NE	(1)
Thousand-Acre Tract	27	32	18	NW	(1)
Thousand-Acre Tract	27	32	18	SE	(1)
Thousand-Acre Tract	27	32	18	SW	(1)
Thousand-Acre Tract	27	32	7	SW	(1)
Thousand-Acre Tract	27	32	7	SE	(1)
Thousand-Acre Tract	27	32	8	SW	(1)
Three Links	27	32	2	SW	(60)-11
Tinker	27	33	11	NW	(59)-125
Toad Frog	28	33	20	NW	(63)-72
Tom C No 3	28	32	29	NE	(61)-154
Tom C No 4	28	32	20	NW	(61)-113
Tom C No 4	28	32	29	NE	(61)-151, (58)-4
Tom Cat	27	33	5	NW	(59)-28
Tomahawk	27	33	9	NE	(59)-92
Tower & Regan land	28	31	8	NE	(1)
Tri-State Chitwood Mill	28	33	33	SW	(63)-187
Trimore	28	33	33	NW	(63)-128, (58)-9
Trinity	28	32	34	SW	(61)-191, (58)-5, 6
Trossack	29	32	9	SE	(64)-19, (58)-4
Trouble	27	33	9	NE	(59)-85
Troup	28	34	35	SE	(63)-239
Troup	28	32	21	SE	(61)-97
Troup	28	32	19	SE	(1)
Troup Mines	28	32	21	SE	(1)
Tuckahoe Mines	28	33	27	SW	(1)
Tuckahoe Mines	28	33	28	NE	(1)
Tuckahoe Mines	28	33	28	SE	(1)
Tulsa-Pittsburg	29	34	23	NW	(62)-23, (58)-1013-16
Twelve O'Clock	28	32	28	NW	(61)-140
Twin Cities	28	32	17	NW	(61)-50, (58)-64, 65
Twin Cities	28	32	21	SE	(61)-79
Twin City Mine	28	32	21	SE	(58)-13, 14
Two Bobs	28	33	21	SE	(63)-53
U S Lead & Zinc Co	28	33	21	NW	(63)-58
U S Mill	27	32	19	NE	(60)-38
U S Mill	27	32	19	NW	(60)-38
Underroof	27	33	4	NE	(59)-2, (58)-1

<u>MINE NAME</u>	<u>T</u>	<u>R</u>	<u>S</u>	<u>OS</u>	<u>Reference</u>
Union	28	32	27	SW	(61)-166
Union Mine	27	32	28	SE	(58)-1
United Zinc Co	28	33	7	SE	(63)-15, (58)-10-12
United Zinc Co	28	33	7	SW	(58)-13
United Zinc Co Westfield	28	32	34	SW	(61)-188
Unity	28	33	1	SE	(63)-3, (58)-1
Ute	27	33	11	NW	(59)-127
Utopia	27	33	16	SE	(59)-162
Valentine	28	33	16	NE	(63)-33
Van Hoose					(64)-59
Van Scoyk	28	33	34	SW	(63)-178
Vanalia	27	33	4	SE	(59)-87
Vantage	28	32	6	SW	(61)-21
Vaughan	28	32	32	NE	(61)-168
Vernon	28	32	21	SE	(61)-99
Vestal	27	33	4	SE	(59)-109
Vestry	27	32	3	SE	(60)-6
Victor Mine	28	32	20	SW	(58)-6-10
Victor Mining Co	28	32	20	SW	(1)
Victoria	28	33	31	NW	(63)-107
Vinegar Hill	28	33	28	NW	(63)-94
Vinegar Hill	28	33	28	NE	(63)-94
Virginia, Old	28	32	17	SE	(61)-68
Vogey	28	32	34	NW	(61)-195
Vogey	28	32	27	SW	(61)-195
Walcott	27	33	11	NE	(59)-196
Walcott	27	33	11	NW	(59)-196
Walker	27	33	14	NE	(59)-172
Walker Shaft (Boston Get)	28	32	21	SE	(58)-2
Walnut Ridge	28	33	1	NW	(63)-1
Wampum	28	32	31	NW	(61)-159
Waneta-Pearl	28	33	17	NW	(63)-19, (58)-1
Water Dog	27	32	11	SW	(60)-56
Weaver	29	32	18	NE	(64)-45
Weaver	29	33	17	SW	(62)-3
Webb land	28	32	16	NE	(1)
Webb land	28	32	21	NE	(1)
Weno	27	33	4	NE	(59)-7
West 7th Street	27	33	5	SW	(59)-41, (58)-1
West Hollow Mining Co	28	34	25	SE	(1)
West Hollow Mining Co	28	34	36	NE	(1)
West Side Mines, Old	29	32	16	SE	(64)-40, (58)-4
West Twenty	28	32	33	NE	(61)-172
Western Zinc Co	27	33	11	SE	(1)
Western Zinc Co	27	33	11	SW	(1)
Western Zinc Co	27	33	11	NE	(1)
Western Zinc Co	27	33	11	NW	(1)
Western Zinc Co	27	33	12	NW	(1)

<u>MINE NAME</u>	<u>T</u>	<u>R</u>	<u>S</u>	<u>OS</u>	<u>Reference</u>
Western Zinc Co	27	33	12	SW	(1)
Western Zinc Co	27	33	12	SE	(1)
Westney-Foltz	28	33	21	NW	(63)-51
What Cheer	28	32	33	NE	(61)-173, (58)-3, 4
White Dog	28	32	7	NW	(61)-16
White Shirt	28	33	30	SE	(63)-97
Whitsett	28	32	34	NW	(61)-194
Wild Cherry Tree	27	32	17	SW	(60)-41
Wildwood	27	33	18	SE	(59)-214
Wilgus Shaft(Boston Get)	28	32	21	SE	(58)-5
William	28	34	36	SW	(63)-248
Windsor Mining Co	27	33	1	SW	(1)
Wingfield	28	33	12	NE	(63)-8, (58)-4, 5
Winifrede	27	32	4	SW	(60)-29
Wolfheart	27	32	3	NW	(60)-15, (58)-5
Wood land	28	32	8	SE	(1)
Wood land	28	32	9	SW	(1)
Woodlawn	28	33	36	NE	(63)-90
Woods & Brown	28	32	17	SW	(61)-58, (58)-18, 20
Woods & Brown Mine	28	32	17	SW	(58)-19
Woodson Shaft	27	33	2	NW	(1)
World's Fair Mining Co	27	32	7	SW	(1)
Wysbrod	28	33			(63)-102
Yale	28	32	20	NW	(61)-92, (58)-17
Yellow Dog	28	32	6	SW	(61)-5, (58)-3, 4, 5
Yellow Jacket	27	33	13	NW	(59)-165
Yellow Jacket	28	34	14	SW	(63)-193
Yellow Jacket	28	34	23	NW	(63)-193
Yellow Pup	28	34	23	NW	(63)-194
Yellow Stone	27	33	11	SE	(59)-217
Yellowstone Mine	27	33	11	SE	(58)-1
Zinc Fields	28	32	20	NW	(61)-88
Zinco	28	33	26	SE	(63)-89
Zola	27	33	2	SW	(59)-123, (58)-2
Zola	27	33	11	NW	(59)-123

APPENDIX C

Figures 1, 2, 3, 4, 5

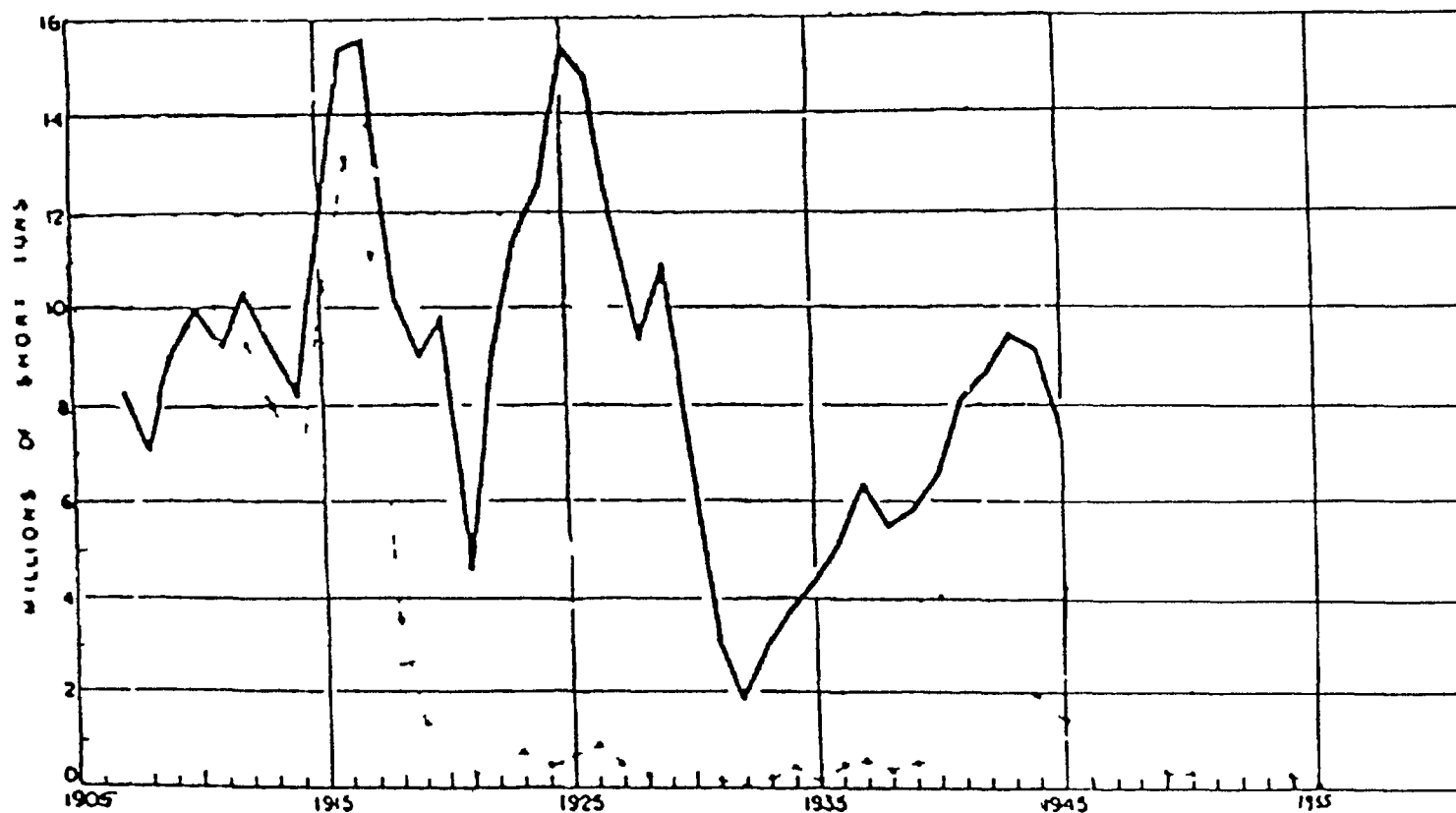


Figure 1 Quantities of Crude Ore Milled

LEGEND

- = Total crude ore milled in Tri-State District (Missouri Kansas Oklahoma)
- = Total crude ore milled in southwestern Missouri

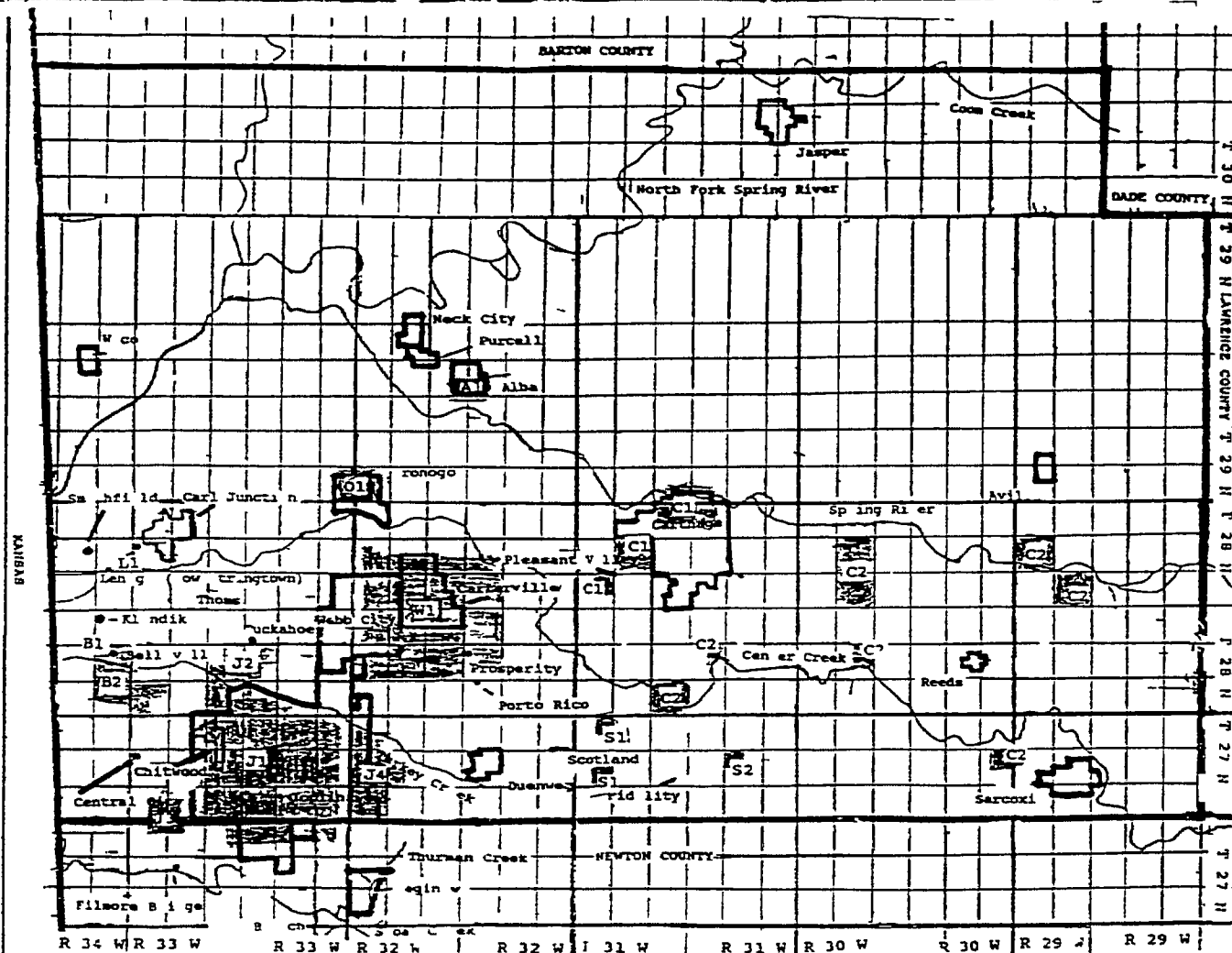


Figure 2 Mining District Locations--1894

- W1 Webb City-Carterville District
- J1-J4 Joplin District
 - J1 Joplin District Proper
 - J2 Tuckahoe Mines
 - J3 Roaring Springs Group
 - J4 Thousand Acre Tract and Others
- B1-B2 Belleville District
 - B1 Belleville District Proper
 - B2 Las Hollow West Hollow and Cottonwood Hollow Mines
- O1 Oonongo District
- A1 Alba District
- C1-C2 Carthage District
 - C1 Carthage District Proper
 - C2 Outlying Mines
- S1-S2 Scotland District
 - S1 Scotland District Proper
 - S2 Burch District
- L1 Lehigh District

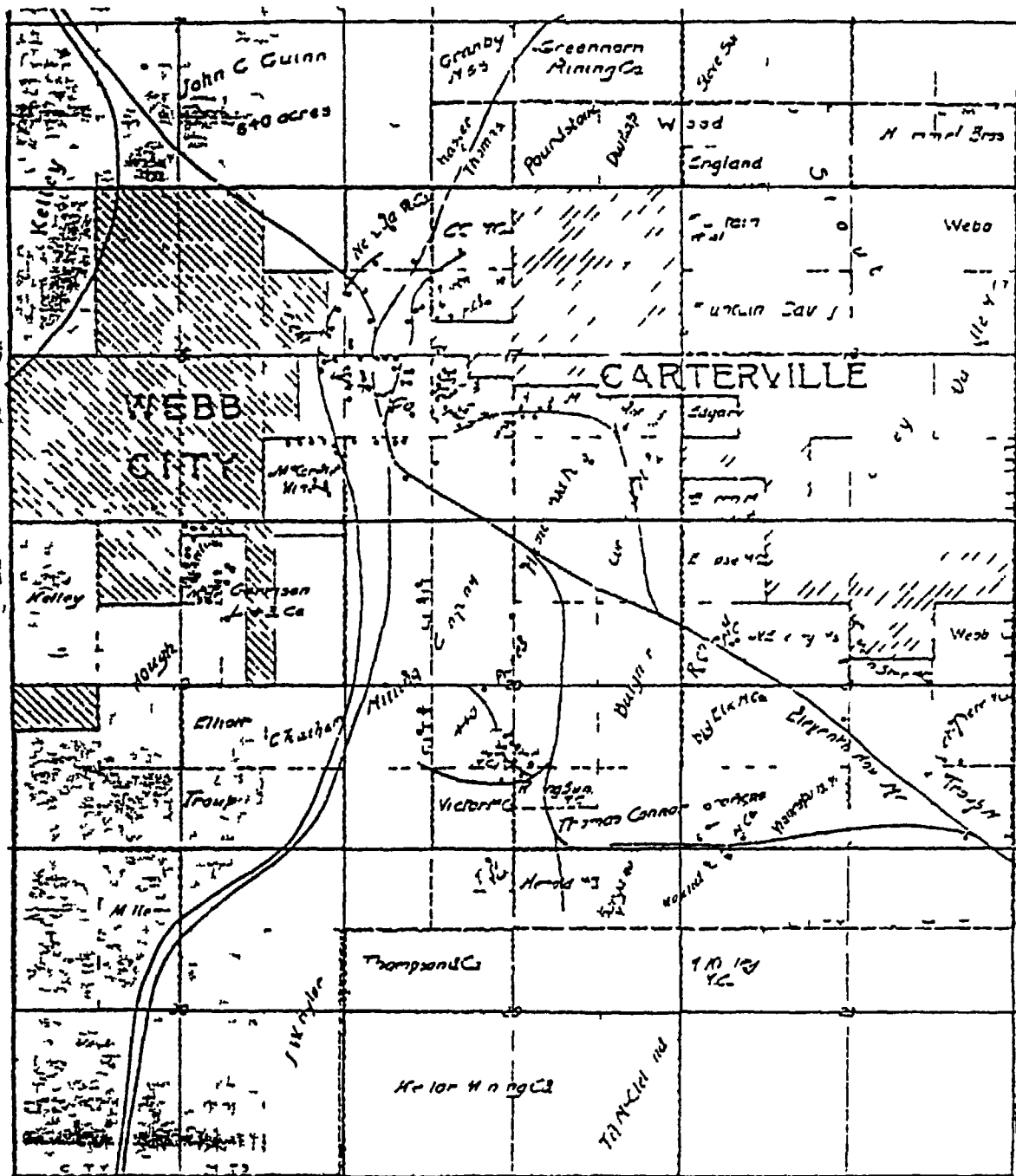


Figure 3 Webb City-Carterville District--1894'

LEGEND

• Mine'

SOURCE 1894 Report

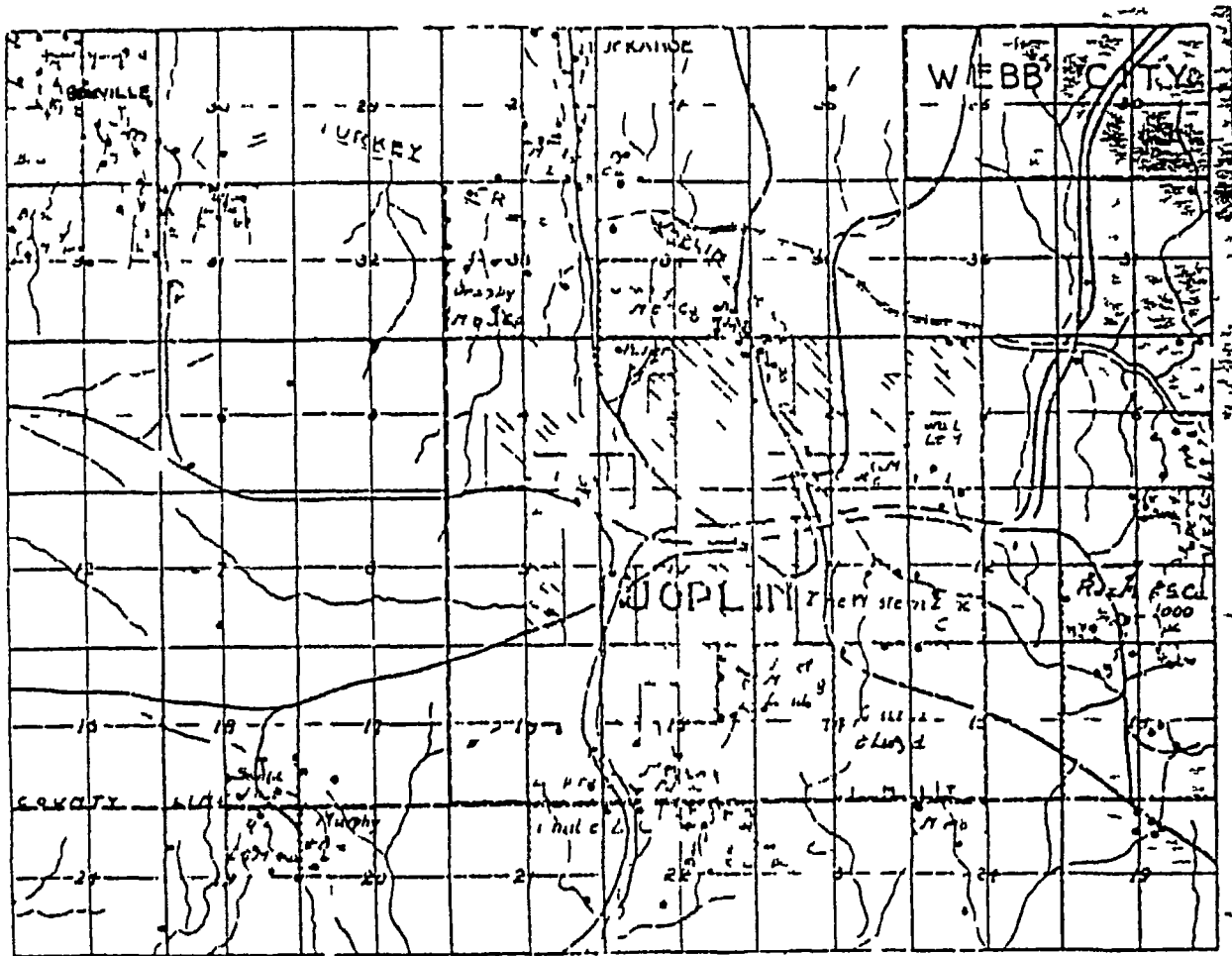


Figure 4 Joplin District and
Belleville District
--1894

LEGEND

• Mine

SOURCE 1894 Report

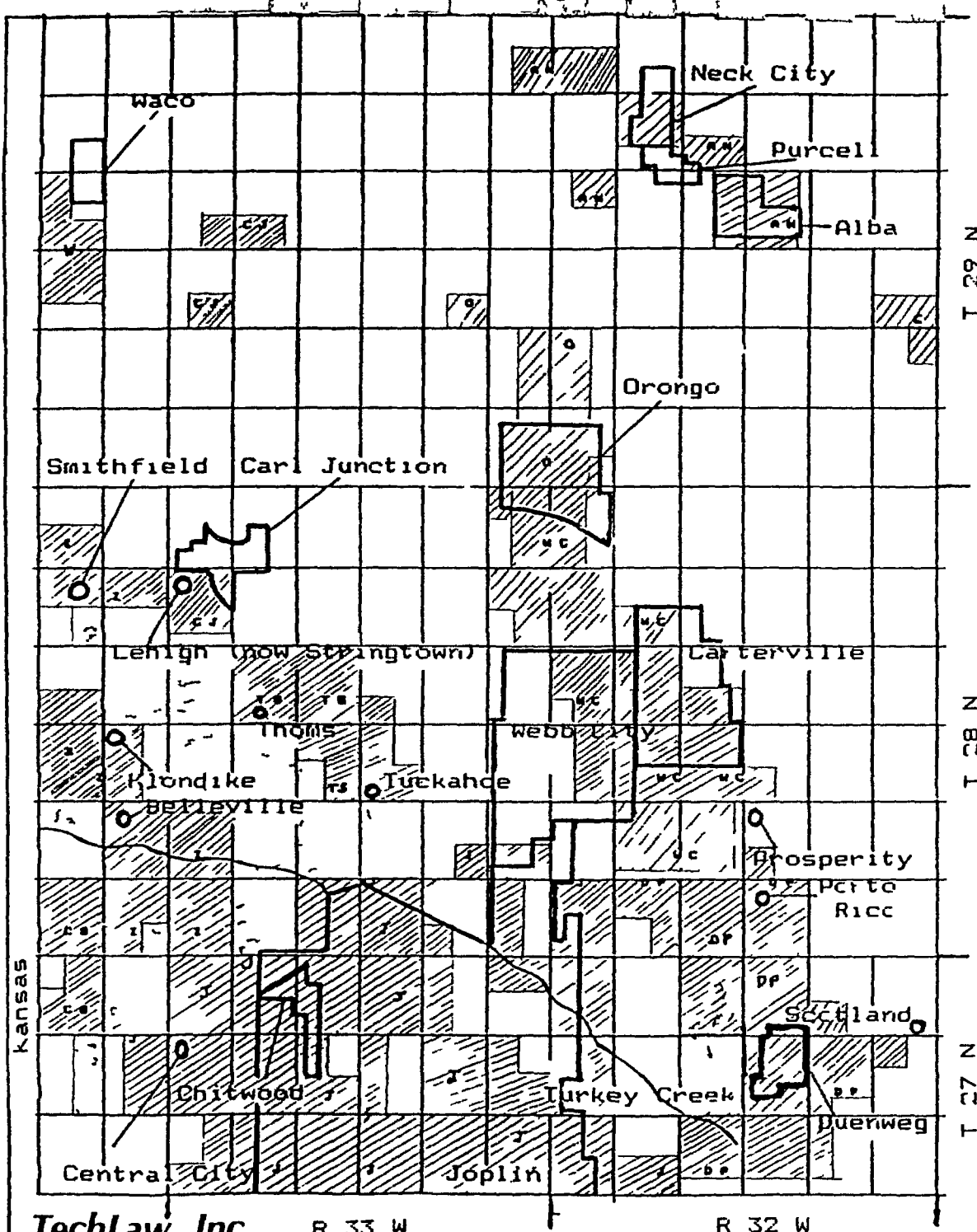


Figure 5 Mining District Locations

LEGEND

AN---Alba-Neck City District
 CJ---Carl Junction District
 C- Carthage District
 CS---Cave Springs District
 DP---Duenweg-Porto Rico District
 J---Joplin District
 O---Oronogo District
 TS Thoms Station-Sherwood District
 W- Waco District
 WC-- Webb City-Carterville-Prosperity District
 Z - Zincite District (AKA Zincite-Klondike Zincite Smithfield)

Actively Mined Areas -District Defined

Actively Mined Areas District Cannot Be Defined

No Mining Conducted or Scattered Prospects Only

1" = 1 Mile

SOURCE MDNR Study Yearbooks
 1894 Report Mining Maps

APPENDIX D

JASPER COUNTY MINING DATABASE PROGRAMS

I INTRODUCTION

The Jasper County Mining Database was created using dBase III Plus software. The single database file, Jasper1 dbf, is manipulated using a series of programs written in the dBase programming language by TechLaw, Inc. These programs allow the user to add new records, edit existing records, delete records, print reports, index, and backup important files.

The programs, database, format, and index files associated with the Jasper County Mining Database are contained on a single, high density (1.2 Megabyte), floppy diskette. The files on this diskette should be copied to a hard disk which also contains dBase III Plus software. To run these programs, load dBase III Plus, type "Do Jasper", and hit the Return Key.

II PROGRAM EXECUTION

Upon initiation of the Jasper program, the user is presented with a menu. The Main Menu of the Jasper County Mining Database programs provides the user with options for manipulating the database (Figure 1). The database is comprised of records. Each record in the database contains the following fields:

Mining Company - The name of the mining company

Year - The year of the mining activity

Type - The type of mining activity

District - The district in which the activity occurred

Comments - Any comments regarding the activity

Each record in the database has a unique record number, which is used to access specific records within the database. Additional explanations of the information contained in the fields listed above, are contained in Section III of this Report.

The operation of each of the Main Menu options is explained below.

A Add a Record

This option allows the user to add additional records to the database. Upon selecting this option, the user is presented with a screen for entering a new record as illustrated in Exhibit 2.

B Edit a Record

This option allows the user to change the information in any of the records currently contained in the database. Upon selecting this option, the user is presented with the menu entitled "Edit a Mining Record" (Exhibit 3). If the number of the record to be edited is known, the user selects the first option, "Enter a Record Number", and is then prompted to enter this number (Exhibit 3). Upon entering the record number, a screen containing the record's current information is displayed. Any of the fields in the record can then be modified by the user (Exhibit 3).

If the user is uncertain of the record number they wish to edit, the second option on the "Edit a Mining Record" menu, "Display Record Numbers", can be selected (Exhibit 3). Upon selecting this option, the menu entitled "Listing of Mining Records" is displayed (Exhibit 4), which gives the user the choice of seeing record numbers displayed in record number order, alphabetically by mining company name, or chronologically by year (Exhibit 4). Each of these options will display on the screen a listing consisting of record number, mining company name, and year.

C Delete a Record

This option allows the user to delete any record in the database. Upon selecting this option, the user is presented with a menu entitled "Delete A Mining Record" (Exhibit 5). Upon selecting the "Delete a Record" option from this menu, the user is prompted to enter the record number they wish to delete. The screen then displays the record number, the mining company, and the year, and asks the user if that is the correct record to delete. Entering 'Y' will then delete the record (Exhibit 5).

D Print Options

Selecting this option presents the user with a menu of reports which can be printed from the database (Exhibit 6). The first print option, "Print Database by Mining Company and Year", will print each record in the database alphabetically by mining company name, with each record for a particular mining company listed chronologically (Attachment III).

The second option, "Print Database by District and Year", will print each record in the database, alphabetically by District, with records within the same District listed chronologically. Records in the same year, will list mining company names alphabetically (Attachment IV)

The third print option will print a list of mining company names contained in the database, alphabetically (Attachment II)

E Utilities

This option provides the user with the capability of updating the index files associated with the database, and to backup the database files to floppy diskette (Exhibit 7). Additional instructions for the backup option are provided when this option is selected (Exhibit 7)

F Quit

The final option from the Main Menu closes the Jasper County Mining Database programs. Upon selecting this option, the user is presented with an exit screen which reminds the user to backup the database.

Exhibit 1

JASPER COUNTY MINING DATABASE
***** MAIN MENU *****

ADD A RECORD
> EDIT A RECORD
DELETE A RECORD
PRINT OPTIONS
UTILITIES
QUIT

Mark selection with up/down arrow cursor key <ENTER> to make selection

Exhibit 2

JASPER COUNTY MINING DATABASE

Record Number 2777

Mining Company _____

Year _____ Type _____

District _____

Comments _____

Ctrl-W or PgDn to Save Changes and Return Esc to Abandon

Exhibit 3

JASPER COUNTY MINING DATABASE
EDIT A MINING RECORD

>Enter a Record Number
Display Record Numbers
Return to Main Menu

Enter Record Number or Esc to Return

Enter Record 23

JASPER COUNTY MINING DATABASE

Record Number 23

Mining Company COLUMBIA MINING COMPANY

Year 1907 Type OPER

District CAVE SPRINGS

Comments MILL BUILT ON BELLEVILLE LAND & MINING CO LAND

Ctrl-W or PgDn to Save Changes and Return Esc to Abandon

Exhibit 4

JASPER COUNTY MINING DATABASE
LISTING OF MINING RECORDS

List Records by Record Number
>List Records by Mining Company
List Records by Year
Return to Previous Menu

Record#	miner	year
289	1915 MINING CO	1915
315	1915 MINING CO	1916
2443	66 MINE CORPORATION	1934
361	66 MINE CORPORATION	1935
598	A F FORD & CO	1914
2078	A R G MINING CO	1916
1316	A S BALDRY & CO	1913
1274	A W C MINING CO	1913
453	A W C MINING CO	1914
454	A W C MINING CO	1914
489	A W C MINING CO	1915
490	A W C MINING CO	1915
515	A W C MINING CO	1916
516	A W C MINING CO	1916
1078	A W GRANNIS CO	1908
259	ABALINE MINING CO	1914
142	ABERDEEN MINING CO	1911
176	ABERDEEN MINING CO	1912
219	ABERDEEN MINING CO	1913

Press any key to continue

Exhibit 5

JASPER COUNTY MINING DATABASE
** DELETE A MINING RECORD **

>Delete a Record
Return To Main Menu

Enter Record Number or Esc to Return

Enter Record 1

Record Selected 1

Mining Company MURPHY, P

Year 1886

Is this the correct record to delete?

Exhibit 6

JASPER COUNTY MINING DATABASE
PRINT DETAILED REPORTS

>Print Database by Mining Company and Year
Print Database by District and Year
Print Alphabetic List of Mining Companies
Return to Main Menu

Mark selection with up/down arrow cursor key (ENTER) to make selection

Exhibit 7

JASPER COUNTY MINING DATABASE
***** UTILITIES *****

Reindex All Databases in System
>Backup All Databases To Floppy Disk(s)
Return To Main Menu

This file backup option uses the Disk Operating System Backup utility

The first prompt tells you to Insert Source Disk if Appropriate Simply hit the return key

The second prompt requests that you insert a diskette in Drive A, and you should place a diskette in Drive A

Insert additional diskettes as prompted to contain all of the system files Once the process is complete, you will be returned to the database system If you need to restore the files on the backup diskettes to another computer, ask your computer support personnel for assistance in using the DOS Restore Command

Press any key to continue

Insert source disk if appropriate
Strike any key when ready

Insert backup diskette 01 in drive A

Warning! Files in the target drive
A \ root directory will be erased
Strike any key when ready

JASPER COUNTY MINING DATABASE
***** E X I T *****

Remember to frequently backup the database

Main Menu Selection UTILITIES provides a backup routine